

ENVIRONMENTAL ASSESSMENT

Crow Boundary Settlement Act

Phase 2 Land Exchange



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Contents

1.0	INTRODUCTION AND BACKGROUND.....	1
1.1	Background	1
1.2	Purpose and Need for the Proposed Action	1
1.3	Public Scoping.....	3
1.4	Conformance with Land Use Plans	3
1.4.1	BLM Lands	3
1.4.2	State Land	4
1.5	Relationship to Statutes, Regulations, Mutual Agreements, or other Plans	4
2.0	PROPOSED ACTION AND ALTERNATIVES	6
2.1	Proposed Action	6
2.1.1	Proposed Action or Exchange Alternative	6
2.2	Alternatives.....	15
2.2.1	Proposed Action or Exchange Alternative.....	15
2.2.2	No Action	15
2.2.3	Mitigated Exchange Alternative.....	15
2.2.4	Selection of other BLM Lands	15
2.2.4	Other Alternatives Considered but Not Carried Forward	16
3.0	AFFECTED ENVIRONMENT	16
3.1	BLM Lands	16
3.1.1	General Geography, Topography and Aesthetics	16
3.1.2	Climate	17
3.1.3	Groundwater, Geology and Mineral Potential	17
3.1.4	Surface Water Rights.....	18
3.1.5	Vegetation	19
3.1.6	Wildlife Habitat and Fisheries	
3.1.7	Recreation	23
3.1.8	Cultural Resources.....	23
3.1.9	Access	23
3.1.10	Socioeconomics.....	24
3.1.11	Hydrologic and Soil Resources	26
3.2	State Lands	27
3.2.1	General Geography, Topography and Aesthetics	27
3.2.2	Climate	27
3.2.3	Groundwater, Geology and Mineral Potential	28
3.2.4	Surface Water Rights.....	29
3.2.5	Vegetation	30
3.2.6	Wildlife Habitat and Fisheries	31
3.2.7	Recreation	35
3.2.8	Cultural Resources.....	35
3.2.9	Access	35
3.2.10	Socioeconomics.....	35
3.2.11	Hydrologic and Soil Resources	39

4.0	CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES	40
4.1	Impacts of the Proposed Action	41
4.1.1	General Geography, Topography and Aesthetics	41
4.1.2	Climate	41
4.1.3	Groundwater, Geology and Mineral Potential	41
4.1.4	Surface Water Rights	41
4.1.5	Vegetation	42
4.1.6	Wildlife Habitat and Fisheries	44
4.1.7	Recreation	45
4.1.8	Cultural Resources	46
4.1.9	Access	46
4.1.10	Socioeconomics	48
4.1.11	Hydrologic and Soil Resources	50
4.2	Impact of No Action	51
4.2.1	General Geography, Topography and Aesthetics	51
4.2.2	Climate	51
4.2.3	Groundwater, Geology and Mineral Potential	51
4.2.4	Surface Water Rights	51
4.2.5	Vegetation	51
4.2.6	Wildlife Habitat and Fisheries	52
4.2.7	Recreation	52
4.2.8	Cultural Resources	52
4.2.9	Access	52
4.2.10	Socioeconomics	52
4.2.11	Hydrologic and Soil Resources	53
4.3	Impact of the Mitigated Exchange Alternative	53
4.3.1	General Geography, Topography and Aesthetics	53
4.3.2	Climate	53
4.3.3	Groundwater, Geology and Mineral Potential	53
4.3.4	Surface Water Rights	54
4.3.5	Vegetation	54
4.3.6	Wildlife Habitat and Fisheries	54
4.3.7	Recreation	54
4.3.8	Cultural Resources	54
4.3.9	Access	54
4.3.10	Socioeconomics	54
4.3.11	Hydrologic and Soil Resources	56
4.4	Comparison of Alternatives	56
5.0	CONSULTATION AND COORDINATION	61
5.1	Federal Agencies	61
5.2	State Agencies	61
5.3	Tribal Government	61
5.4	Local Government	61
5.5	Non-Governmental Entities	61

6.0 LIST OF PREPARERS 62

7.0 LIST OF AGENCIES, ORGANIZATIONS AND PERSONS RECEIVING COPIES OF THIS EA 64

Appendix A 72

 Scoping Issues Summary 72

Appendix B 75

 Mineral Report Submitted by the BLM State Office 75

 107th Meridian Settlement- Phase II Conveyance Lands 75

Appendix C 78

 Policy On Ground Breaking 78

1.0 INTRODUCTION AND BACKGROUND

1.1 Background

The Crow Boundary Settlement Act of 1994 mandates, among other things, land exchanges between the state and federal government to redress a century-old boundary survey error. The Crow Indian Reservation was created in 1851. In 1868 a Treaty with the Crow Tribe formally established the 107th Meridian as the eastern boundary of the Reservation. In 1891 this eastern boundary was surveyed in an attempt to establish the specific on-the-ground location of the 107th Meridian. Later, as technology improved, it was discovered that this survey had strayed to the west of the actual on-the-ground location of the 107th Meridian. The effect of this survey error meant that, for years, the Crow Tribe had been denied land that had actually been granted to it from the Wyoming-Montana border on the south to the Yellowstone River on the north, including land along the western edge of the Northern Cheyenne Indian Reservation.

For many years after the discovery of the survey error the Crow Tribe sought resolution of the problem via Congressional legislation. Finally, on November 2, 1994 the Crow Boundary Settlement Act (CBSA) was enacted and signed into law by President Clinton. Figure 1-1 is a map representation of this survey error and indicates separate parcels that are specifically addressed in the CBSA. This legislation, in part, provided for the following:

1. It reaffirmed the true 107th Meridian location as the eastern boundary of the Crow Reservation. This re-affirmation had the effect of moving the erroneous monumented boundary easterly to its correct on-the-ground location for the 107th Meridian (Parcel 1 in Figure 1-1).

2. It created an agreement whereby the Crow Tribe relinquished its claim to land which was located in the Northern Cheyenne Indian Reservation as a result of correcting the on-the-ground location of the 107th Meridian (Parcel 2 in Figure 1-1).
3. It provides for a relinquishment by the Crow Tribe of surface and mineral ownership claims on Parcels 3 and 4 (Figure 1-1).
4. In compensation for relinquishment of lands on the Northern Cheyenne Reservation and north to the Yellowstone River, it created a mechanism whereby the Crow Tribe could acquire State-owned land and private land located inside of the Reservation through the land exchange process. Public land, which is managed by the Bureau of Land Management (BLM) and located outside of the Reservation, is to be utilized as a means of completing the required land exchanges.

State lands (surface ownership only) were originally granted to the State of Montana by Section 16 of the 1920 Crow Allotment Act to provide for the education of the Crow Indian children in the public schools. These State lands were originally Crow Tribal trust lands and were purchased from the tribe by the federal government and granted to the State for the maintenance of the common schools on the reservation. If the exchanges are approved, these State lands will once again become Crow Tribal trust lands.¹

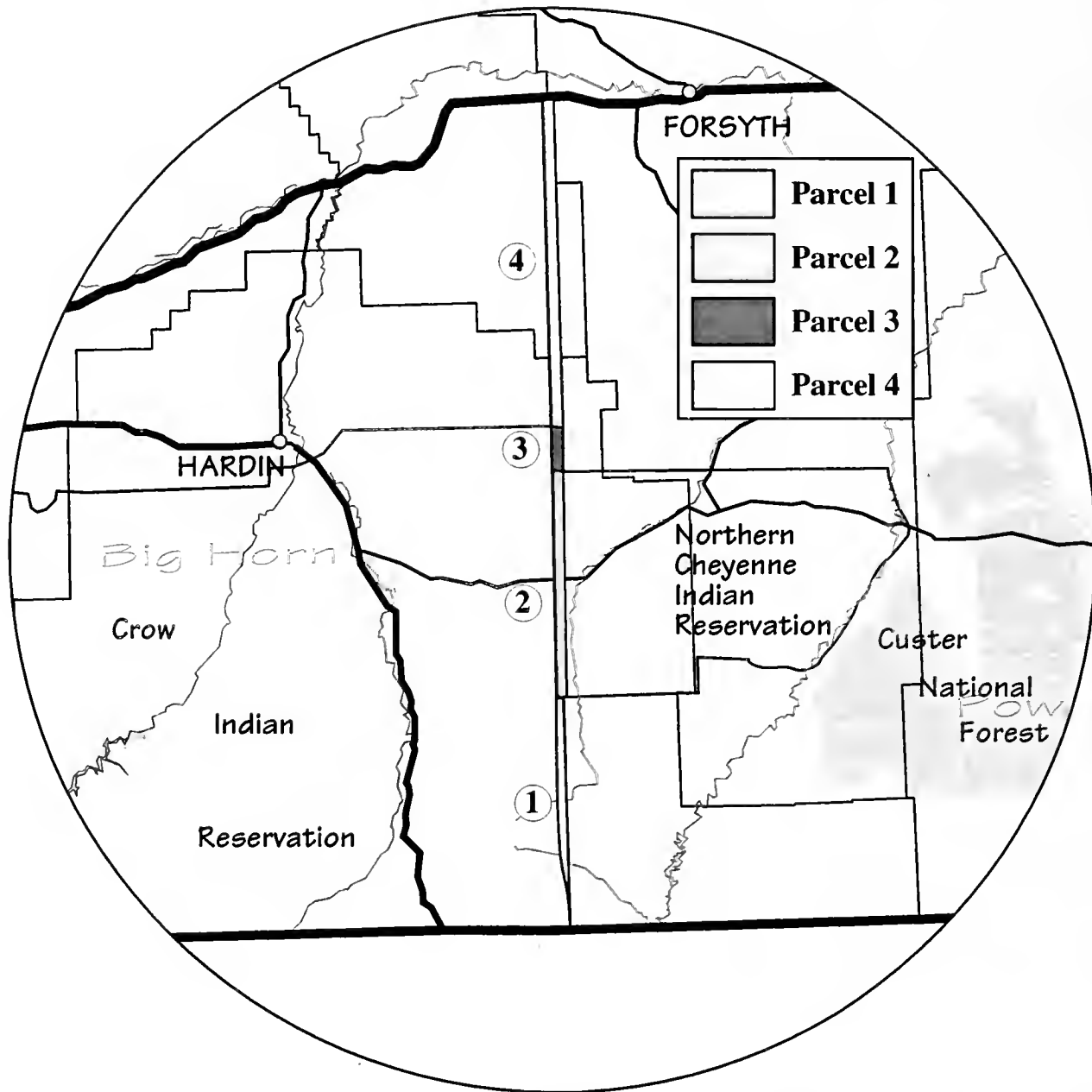
1.2 Purpose and Need for the Proposed Action

The purpose of this Environmental Assessment is to comply with the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA) to address the impacts of the second exchange of land which has been proposed pursuant to the CBSA. This exchange of land is between BLM and the Montana Department of Natural Resources and Conservation (DNRC). The BLM land is located in southeastern Montana in the Big Dry Resource Area and the State land consists of parcels and tracts²

¹ Since both state and tribal "trust" lands are mentioned in this EA, it is important not to confuse the two. State trust lands are owned by the State of Montana and are managed to provide income to the school trust fund. Tribal trust lands are owned by the federal government and are held in trust for the benefit of the Crow Tribe.

² Terms like tract, parcel, property, and lands are used interchangeably in this EA in general usage referring collectively to lands involved in the exchange. When describing specific lands, the term "parcel" is generally used for a property that has a unique, single legal description and the term "tract" is used when two or more parcels that are adjacent or in close proximity are described by a common identifier or tract name.

Figure 1-1 107th Meridian Settlement



generally in the northeastern portion of the Crow Reservation³.

Three separate exchanges are contemplated to exchange the state lands within the Crow Reservation. While this environmental assessment (EA) addresses only the second of these exchanges, understandings between the agencies, programmatic agreements, and much of the environmental information developed and impacts analyzed will be common to each exchange. Thus, this EA incorporates by reference the information in the EA for the first exchange and both EA's provide the basis for tiering⁴ future EA's on subsequent exchanges.

1.3 Public Scoping

Initially, before any exchanges were proposed, the CBSA Steering Committee⁵ sponsored two public hearings in Billings, and one at Crow Agency, to inform the public of the details of the CBSA and the concepts relative to land exchanges which could be utilized to implement the law. Generally, most of those who had grazing leases on the State land in the Crow Reservation, which would be exchanged out of State ownership, strongly objected to the action. Their reasons basically related to the impacts it could have on their ranching operations because they could not be guaranteed a long-term continuation of a grazing lease on that land after ownership had transferred. The Crow Tribe and the tribal members who spoke at the hearings were in strong support of land exchanges in order to transfer all State-owned land to the United States to be held in trust for the Crow Tribe.

After the second land exchange proposal had been developed, agreed upon by DNRC and the BLM, and approved in concept by the Land Board, DNRC and BLM held three public scoping meetings. These meetings were held at 7:00 p.m. at the following locations and dates:

- April 22, 1997--- Big Horn County Courthouse, Hardin
- April 23, 1997--- Glendive Public Library, Glendive
- April 24, 1997--- Baker Senior Citizen's Center, Baker

At the meeting held at Hardin, State grazing lessees were concerned about the probable loss of these leases, the impact these losses would have on their ranch and grazing operations, particularly if the state lease provided stock water for an area larger than the state lease, and their perceived inability to influence the outcome of the exchanges. Most Crow Tribal members in attendance at the Hardin meeting voiced strong support for the land exchange and the opportunity it would provide for tribal members to compete for these leases. The issues at the Glendive and Baker meetings were mostly related to concerns raised by the Red Buttes Grazing District involving the designation of BLM leases as adjudicated "base property" within the grazing district and the individual and collective financial impacts to lessees and the district that could occur if these properties were exchanged.⁶

An additional meeting was held in the conference room of the BLM Miles City office on December 15, 1997 with the directors of the East Custer Grazing District. This meeting focused on concerns over the Knowlton tract.

1.4 Conformance with Land Use Plans

1.4.1 BLM Lands

BLM policy regarding the exchange of public lands is outlined in the Big Dry Resource Management Plan of 1996. In chapter 2 "Lands" (pp. 17-18) the criteria for disposal and retention areas is discussed. The docu-

³ Two adjacent sections (1280 acres) of state land west of the Big Horn River are also included in this exchange, at the request of the Crow Tribe. The tract is described as the Grapevine tract in Table 2-1.

⁴ In the "tiering process, an environmental analysis is published in a series of volumes, each building off the earlier ones. each volume is said to "incorporate by reference" the information in the earlier volumes.(40 CFR 1508.28) In this case, the Phase II CBSA exchange environmental analysis tiers to the Phase I analysis.

⁵ The CBSA Steering Committee consists of representatives from the Montana Association of Counties, Montana Department of Natural Resources and Conservation, the Crow Tribe, the Bureau of Land Management, the Solicitor's Office of the Department of Interior, and is chaired by the Bureau of Indian Affairs representative.

⁶ A more complete summary of the issues raised at the scoping meetings is contained in Appendix A.

ment reiterates directives established by the Supplement to State Director Guidance for Resource Management Planning in Montana and the Dakotas for Land Pattern Review and Land Adjustment of 1984, and the State Director Guidance-Access of 1989; which establish retention and disposal zones throughout Montana.

The lands selected by the State of Montana, with the exception of the Knowlton tract, lie within the disposal zones established by the Big Dry Resource Management Plan.

Criteria for inclusion of the Knowlton tract is also discussed in the Big Dry Resource Management Plan under "Retention Areas" (page 18) which states, "Individual tracts or parcels in the retention areas may be disposed or repositioned through sale or exchange when significant management efficiency, greater public values, or other objectives would be met." However, under the normal exchange processes initiated by BLM, these parcels would not be considered for exchange or disposal.

Regulations guiding the management of State trust lands, including those regarding exchanging of lands, focus on providing the greatest revenue to the public schools as the primary goal (See 1.4.2 State Lands). In order to effect the mandates of the Crow boundary Settlement Act of 1994 and still remain within this focus, the State of Montana has selected some timbered lands to enhance the revenue-generating capability of lands it will receive through the exchange. Assumptions related to potential impacts of inclusion of these lands are discussed in other chapters of this document. The inclusion of the Knowlton tracts is consistent with the latitude granted within the Big Dry Management Plan and with the direction of the Crow Boundary Settlement Act of 1994 to include such areas, if necessary, to accomplish mandated exchanges.

The proposed exchange is also in conformance with the Supplement to State Director Guidance for Resource Management Planning in Montana and the Dakotas for Land Pattern Review and Land Adjustment. This supplement was published in 1984 to provide guidance for all major types of land adjustment. Three types of criteria were established to provide guidance in categorizing the public lands and making decisions concerning specific land adjustment actions--

---retention, disposal, and acquisition. Through the application of criteria as given in the Supplement, retention and disposal zones were identified for Montana. Retention zones predominantly contain better blocked public lands that meet the retention criteria, define areas where BLM intends to retain existing public lands, and to acquire additional lands. Disposal zones are areas where BLM lands have been identified for potential removal from BLM administration---preferably through exchange. Most of the BLM parcels being considered for use in this exchange are in a disposal zone with the exception of the Knowlton tracts. The BLM State Director has the discretion to include retention lands in the exchange where exceptional circumstances, such as those embodied in the Crow Boundary Settlement Act, may dictate such exchanges to meet the requirements of the law.

1.4.2 State Land

DNRC does not have a formal land use plan, but does have a mandate for multiple use management (MCA 77-1-203, et.seq.) and has adopted a State Forest Land Management Plan that applies to designated State forest land tracts. In addition, the Land Board has established a policy with seven criteria to be considered in the evaluation of land exchanges. These criteria are applied to both the State and BLM land and form the basis for a Land Board decision to exchange lands. These criteria are outlined in Table 1-1.⁷ The Board recognizes that some land exchanges may clearly be in the State's best interest, but may fail to satisfy one or more of the seven criteria in Table 1-1. The first three criteria are based on legal requirements and cannot be waived. In some cases, not all of the criteria will apply to a proposed exchange.

1.5 Relationship to Statutes, Regulations, Mutual Agreements, or other Plans

The BLM land proposed for exchange would be processed in accordance with Section 206 of the Federal Land Policy and Management Act of 1976, as amended, and the regulations at 43 CFR 2200. The State land proposed for exchange would be processed in accordance with the State Land Board Land Exchange Policy, which enumerates constitutional, statutory, and advisory mandates to be met with any land exchange

⁷ The Land Board Exchange Policy, which includes the seven criteria mentioned, was adopted by the Land Board in 1994.

Table 1-1 Montana Board of Land Commissioners - Land Exchange Criteria

<p>Table 1-1 Montana Board of Land Commissioners - Land Exchange Criteria</p>	
Criteria	Description
1. Equal or greater value	Land to be acquired by the state must be at least as valuable as the state land being exchanged. The starting point for this determination is the value, in terms of money, of real estate in a typical market as determined through an appraisal. An attempt should also be made to include location, proximity to public lands, recreational opportunities, scenery, and other amenities in determining relative values.
2. State land bordering on navigable lakes and streams	State lands that border navigable lakes, streams, and other bodies of water with significant public use values may only be exchanged for lands that border similar bodies of water.
3. Equal or greater income to the trust	A land exchange must result in the state receiving equal or greater income for the trusts.
4. Equal or greater acreage	As a general rule, the Board prefers to receive equal or greater acreage, but will consider receiving less acreage in return for substantially higher value or income, or both.
5. Consolidation of state lands	A land exchange should be at least neutral in its net effect on the consolidation of state land. An exchange should not sever a mineral estate from a surface estate. The DNRC will place priority on exchanges which result in consolidation of state lands.
6. Potential for long term appreciation	The land acquired by the state should be as likely to increase in value or revenue potential as the state land exchanged.
7. Access	A land exchange should not diminish the amount of access to state lands or other public lands. Accessible state land that is proposed for exchange should be replaced with acquired lands that offer similar recreational opportunities.

involving school trust lands. Where there is a current BLM grazing lessee, that lessee would continue as the lessee of record when BLM land is transferred to the State, by mutual agreement of the agencies. Upon expiration of the State lease, the lessee would be subject to competition for the lease and would have the opportunity to meet or match a competitive bid for the grazing privileges.

The BLM lands are located in Custer, Dawson, Fallon, Richland and Wibaux Counties and the State lands are located in Big Horn County. None of the counties have a county-wide comprehensive land use plan which would affect this action.

All of the BLM properties are currently leased for livestock grazing. Transfer of ownership of those lands

would be completed in conformance with the grazing regulations at 43 CFR 4120. This regulation provides for a two-year notification to grazing lessees prior to the conveyance of the BLM land. All of the state lands are also currently leased for livestock grazing and the transfer of the ownership of those lands would be completed in accordance with MCA 77-2-201, et seq. In addition, DNRC has agreed to allow BLM to retain easements on all public lands that have existing roads or trails that provide access to adjacent state or other federal lands. Also, no mineral values are involved or are expected to be transferred. Finally, for BLM lands acquired by the state, the state will recognize existing BLM lessees as the lessees of record for purposes of establishing a State preference right. BLM lands with no existing lessee would be leased to the highest bidder, who thereafter would hold the state preference right.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

2.1.1 Proposed Action or Exchange Alternative

In a general sense, this alternative involves the voluntary exchange of all state lands on the Crow reservation for federal lands of equal value managed by BLM. The CBSA mandates an overall exchange of lands equivalent in value to 46,625 acres selected by the state since passage of the Crow Allotment Act in 1920. Of those 46,625 acres once owned by the state, approximately 33,933 acres are still in state ownership. The CBSA places an initial priority for the first five years after passage of exchanging BLM lands for the remaining state land on the reservation. The BLM is expected to initiate a private exchange program that does not involve state land to provide the Crow Tribe with lands the equivalent of approximately 12,700 acres no longer owned by the state.

The specific proposed action for Phase II is to exchange all of the state lands described in Table 2-1 for some or all of the BLM lands described in Table 2-2. In order to assist BLM meet the mandate of the CBSA, all state lands under consideration will be exchanged with the BLM for lands of equivalent value, as determined by appraisal and in accordance with the Land Board Exchange Policy. Of the BLM lands, two adjacent parcels totaling 1,120 acres near Knowlton (Knowlton tract), southeast of Miles City, are the DNRC's first priority for exchange. These lands are in a block of BLM land, most of which was acquired by BLM through exchange for the public benefit. A 320-acre agricultural lease in Richland County (Hardscrabble Creek) is the second priority for acquisition by DNRC. Other BLM lands would be exchanged as necessary to equalize appraised values.

Some properties initially identified as acceptable to DNRC as the lowest priority for exchange, have subsequently been withdrawn from consideration at the request of the Red Buttes grazing district. It was decided that these lands in the Red Buttes grazing

district would not be included in the exchange with the DNRC unless individual lessees or the grazing district request reconsideration. Since no interest in exchange has been shown subsequent to the scoping meeting, the lands within the Red Buttes Grazing District are not included in this environmental assessment nor in Table 2-2. BLM will continue to consider these lands and other disposal lands for the private exchange program also mandated by CBSA. A separate environmental assessment will be issued for lands involved in the private exchange program. The state identified additional lands (included in Table 2-2) that would be acceptable for exchange as a third priority to replace some of the lands withdrawn in the Red Buttes Grazing District. In addition, any BLM lands not transferred in the first (Phase I) exchange will also be considered, if necessary, to equalize appraised values in the Phase II exchange.

The state land consists of 15 properties totaling 7109.40 acres in 11 parcels and two tracts (the two tracts include adjacent parcels leased by the same lessee) generally in the northeastern portion the Crow Reservation (Table 2-1). These properties, with descriptive names, are identified on Figure 2-1.

The BLM land consists of 14 properties totaling 3729.09 acres. In Table 2-2, these properties are combined for convenience into four "tracts" where they are contiguous or in close proximity, and four parcels. Two of these properties, grazing lands with commercial timber (designated "Knowlton Tract" on Figure 2-2) and mixed grazing/cropland parcel (designated "Hardscrabble Creek" on Figure 2-3) are the lands selected by the State as the first and second priorities for exchange. The remaining BLM grazing lease lands are lower in priority for acquisition (See Other Lands shown on Figures 2-3 to 2-6), meaning that these lands will be exchanged, as necessary to reach equivalent values for exchange purposes. The names on the maps (Figures 2-1 to 2-6) correspond with the tract and parcel identifiers listed in Tables 2-1 and 2-2.

The acreage of state and federal land exchanged probably will differ, because of different land value. The Knowlton tract has commercial timber and the Hardscrabble Creek parcel has relatively high cropland value, compared to the value of the state lands on the

Table 2-1 State Lands involved in the Second Crow Boundary Settlement Act Exchange

<p>Table 2-1 State Lands in the Second Crow Boundary Settlement Act Exchange</p>				
Legal Description⁸	Tract/Parcel Identity⁹	Lease Expiration	Acres	County
N2NW4, SE4NW4, NE4, N2SE4 Section 16, T1S, R36E	E. Fork Tullock Creek	2007	360	Big Horn
Section 36, T1S, R35E	Ash Creek	2008	640	Big Horn
Section 36, T1S, R36E	Tullock Divide	2000	640	Big Horn
Section 36, T2S, R36E	W. Fork Tullock Creek	1999	640	Big Horn
S2SW4, S2SE4 Section 16, T3S, R33E	Halfway House Coulee	2003	160	Big Horn
W2SW4, Section 36, T3S, R34E	Onion Creek	2002	109.4	Big Horn
Section 16, T3S, R36E	Reno-Tullock Divide	1999	640	Big Horn
Section 36, T3S, R35E	N. Fork Reno Creek	1999	640	Big Horn
Section 21, T4S, R37E	Reno-Davis Divide	2008	640	Big Horn
Section 36, T5S, R33E	Eychaner Coulee	2003	640	Big Horn
SE4, Section 2, T5S, R36E E2, Section 11, T5S, R36E	S. Fork Reno Creek	2003	480	Big Horn
NE4NW4, S2NW4, N2SW4, SW4SW4, Section 16, T4S, R38E	Middle Fork Davis Creek	2004	240	Big Horn
Section 1, T6S, R30E Section 2, T6S, R30E	Grapevine Creek	1999	1280	Big Horn
Total Acres			7109.4	

Crow Reservation consisting only of rangeland. Because the exchange is to be based on equal values, it will require fewer, more valuable, BLM acres to equal the value of the grazing lands being exchanged by the state. Additional BLM acres needed to meet equivalent

value of the state land will be made up from BLM lands left over from the first, or Phase I, exchange proposal.

⁸ Legal descriptions in Tables 2-1 and 2-2 are Principal Meridian Montana descriptions.

⁹ Identities in Tables 2-1 and 2-2 are used to identify parcels and tracts throughout the environmental assessment without having to resort to the legal descriptions. Descriptive terms in the identities denote nearby topographic or drainage features and are used only for this exchange.

Figure 2-1 State Lands

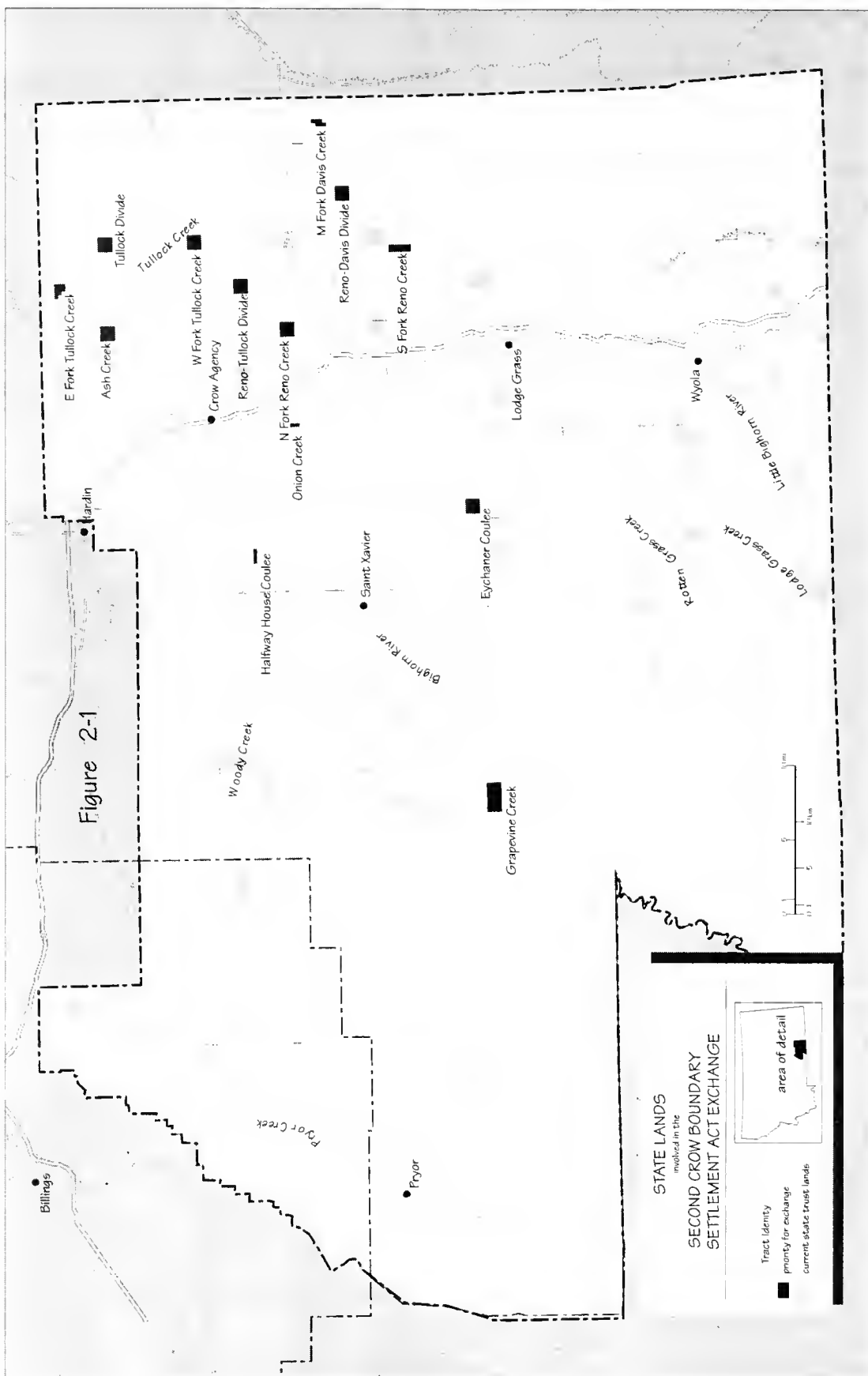


Table 2-2 BLM Lands involved in the Second Crow Boundary Settlement Act Exchange

Table 2-2 BLM Lands in the Second Crow Boundary Settlement Act Exchange			
Legal Description	Tract/Parcel Identity	Acres	County
Priority 1			
Lots 9-12, S2 Section 2; Section 11 T6N, R53E	Knowlton Tract	1120	Custer
Priority 2			
E2 Section 15, T25N, R56E	Hardscrabble Creek	320	Richland
Other lands			
NW4NW4, W2SW4, SE4SW4 Section 24; N2NE4, W2NW4, SW4, Section 26; T19N, R59E	North Smith Creek	480	Richland
S2, Section 34, T4N, R60E	Webster	320	Fallon
N2, Section 1, T3N, R59E	Little Beaver Creek	320	Fallon
SWNW, Section 23 Lot 7, NWSW, Section 26; T26N, R57E	Wells Coulee/Otis Creek ¹⁰	126.61	Richland
W2NW, Section 22, T18N, R55E	Morgan Creek	80	Dawson
Lots 1, 2, S2NE, SE, Section 2; Section 12; T18N, R59E	South Smith Creek Tract	962.48	Wibaux
TOTAL		3729.09	

¹⁰ The Wells Coulee/Otis Creek, Morgan Creek, and South Smith Creek tracts were added to ensure that there was sufficient appraised value in the BLM lands to be equivalent to the value of the State parcels listed in Table 2-1. Lands remaining from previous CBSA exchange proposals will also be exchanged to provide equivalent value for the present exchange.

Figure 2-2 Priority 1 BLM Tract

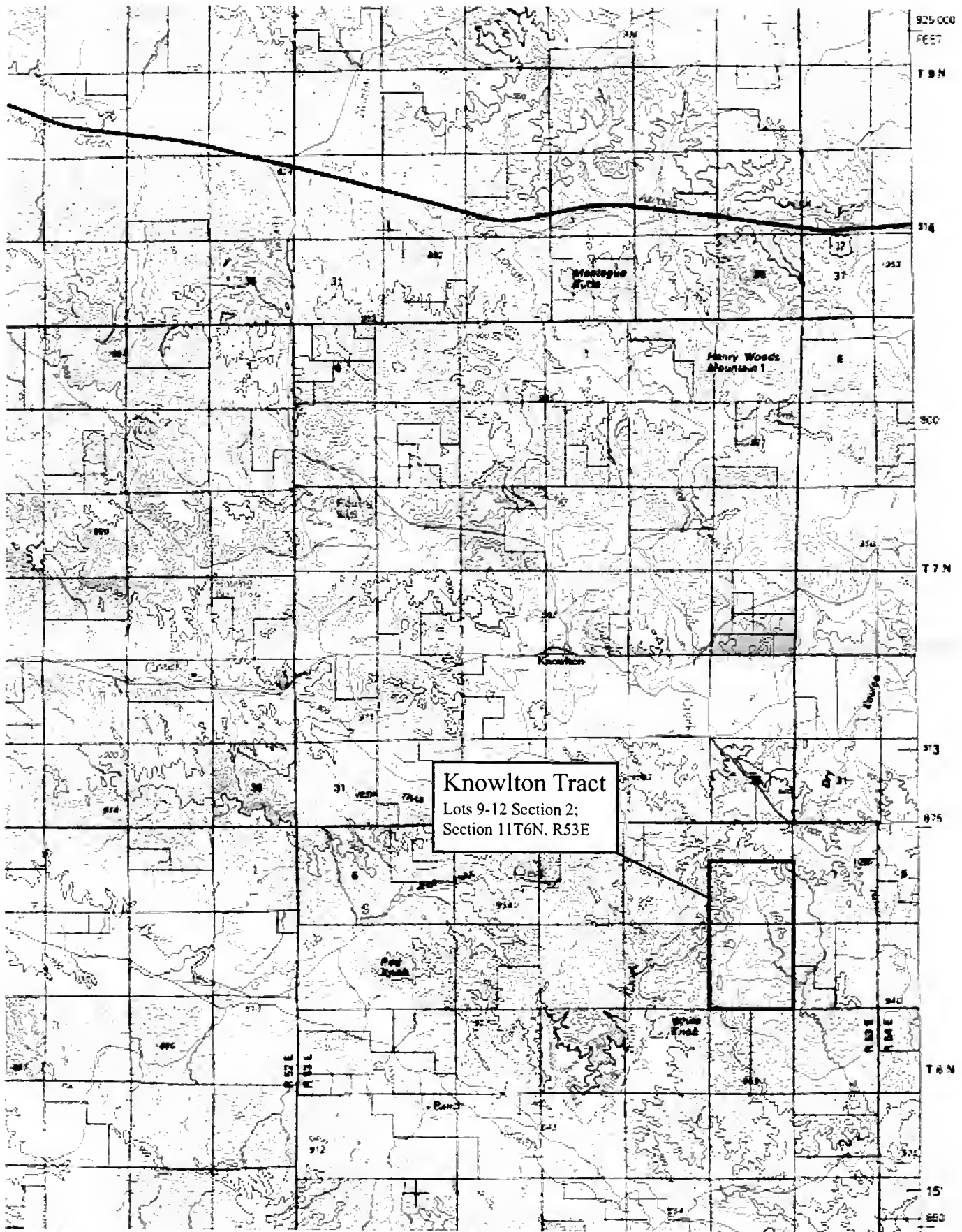


Figure 2-3 Priority 2 BLM Parcel and Other BLM Lands

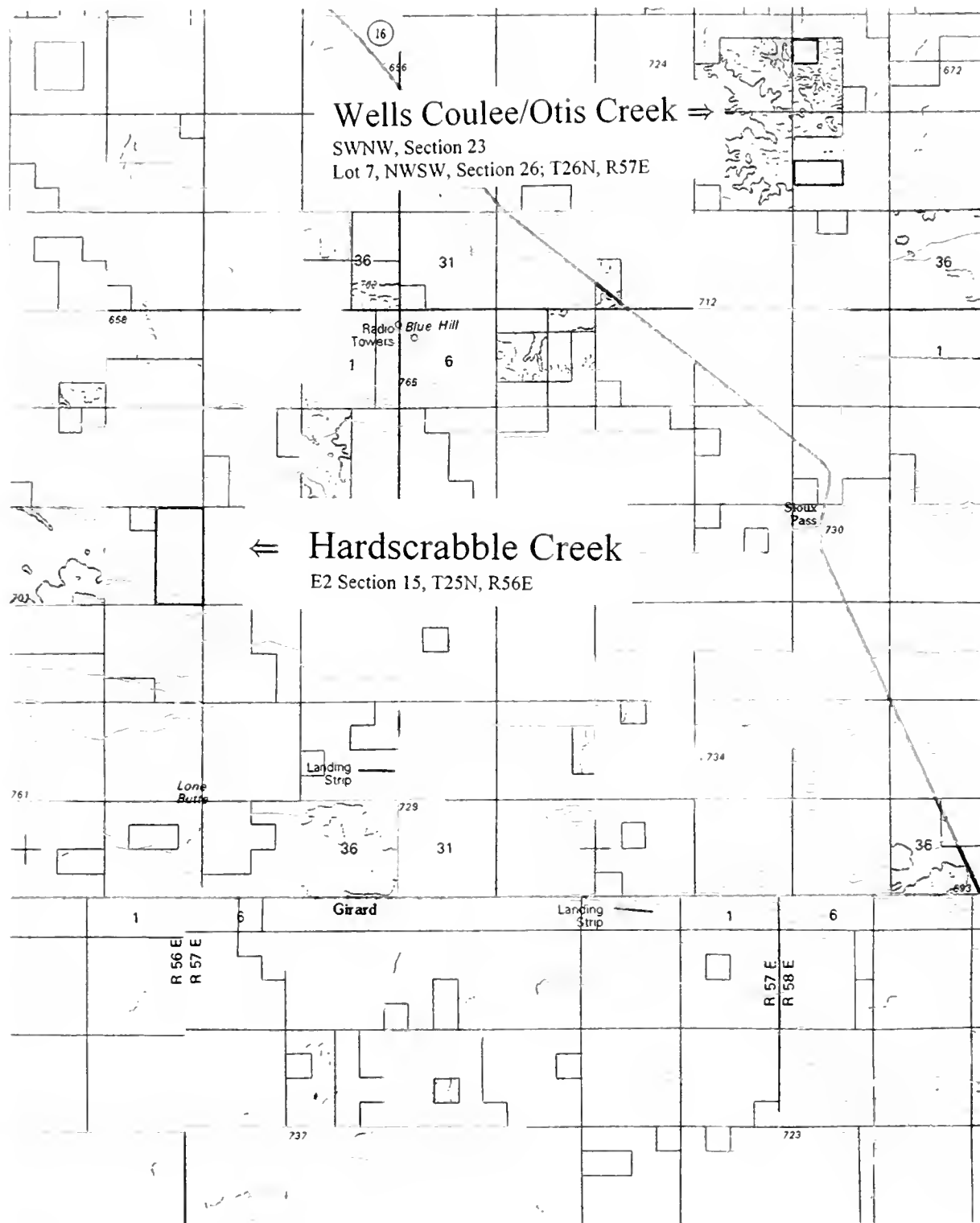


Figure 2-4 Other BLM Lands

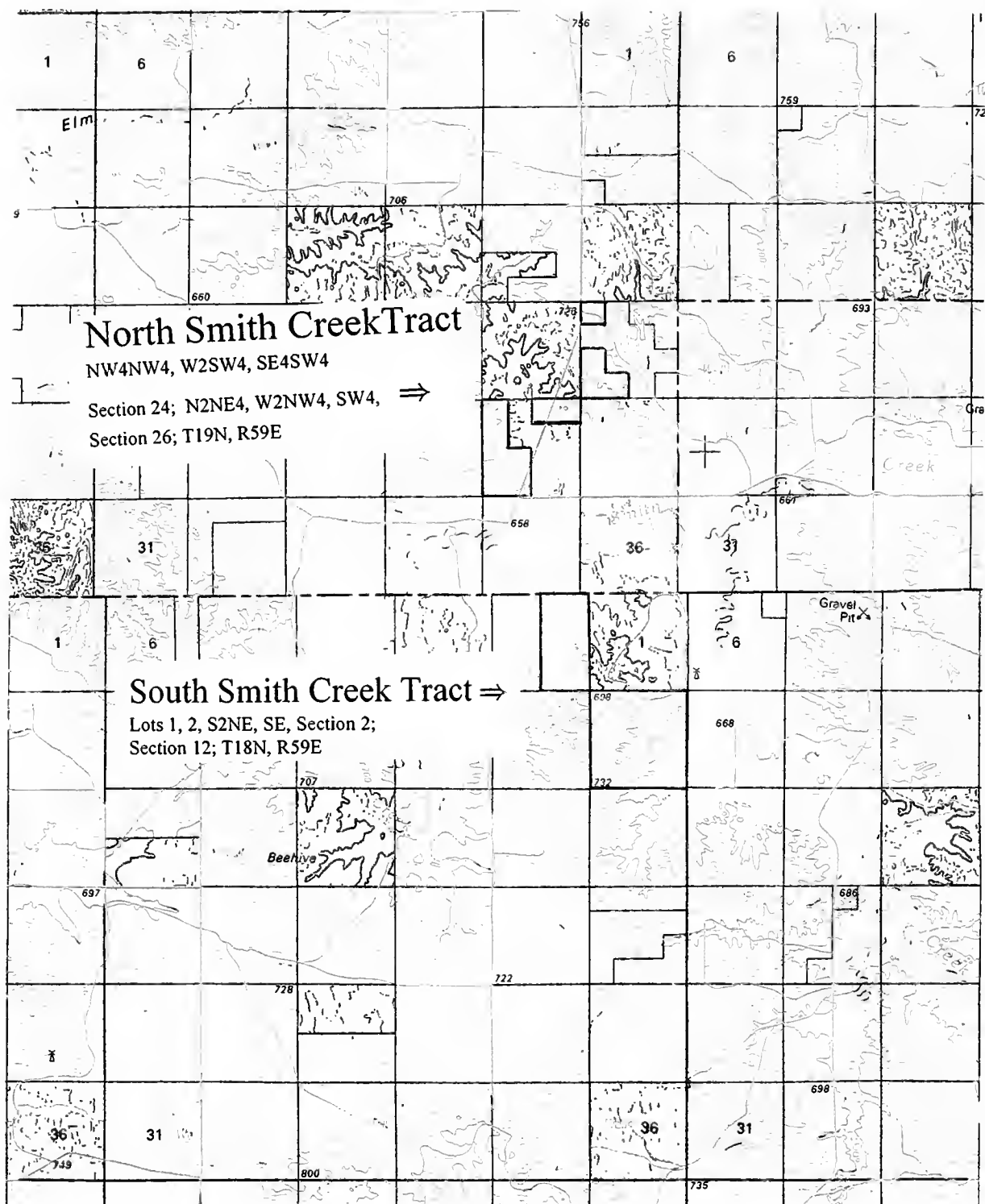


Figure 2-5 Other BLM Lands

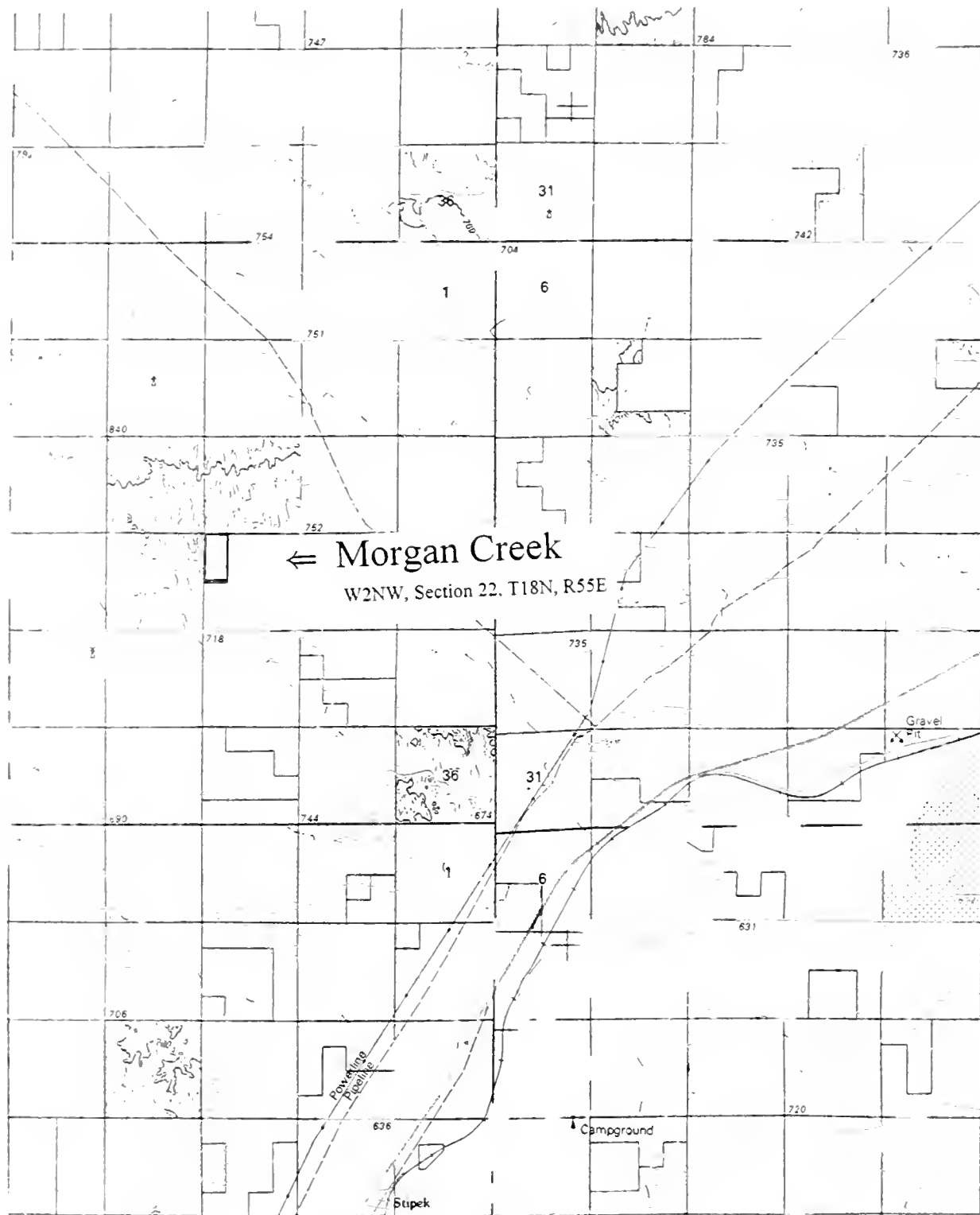
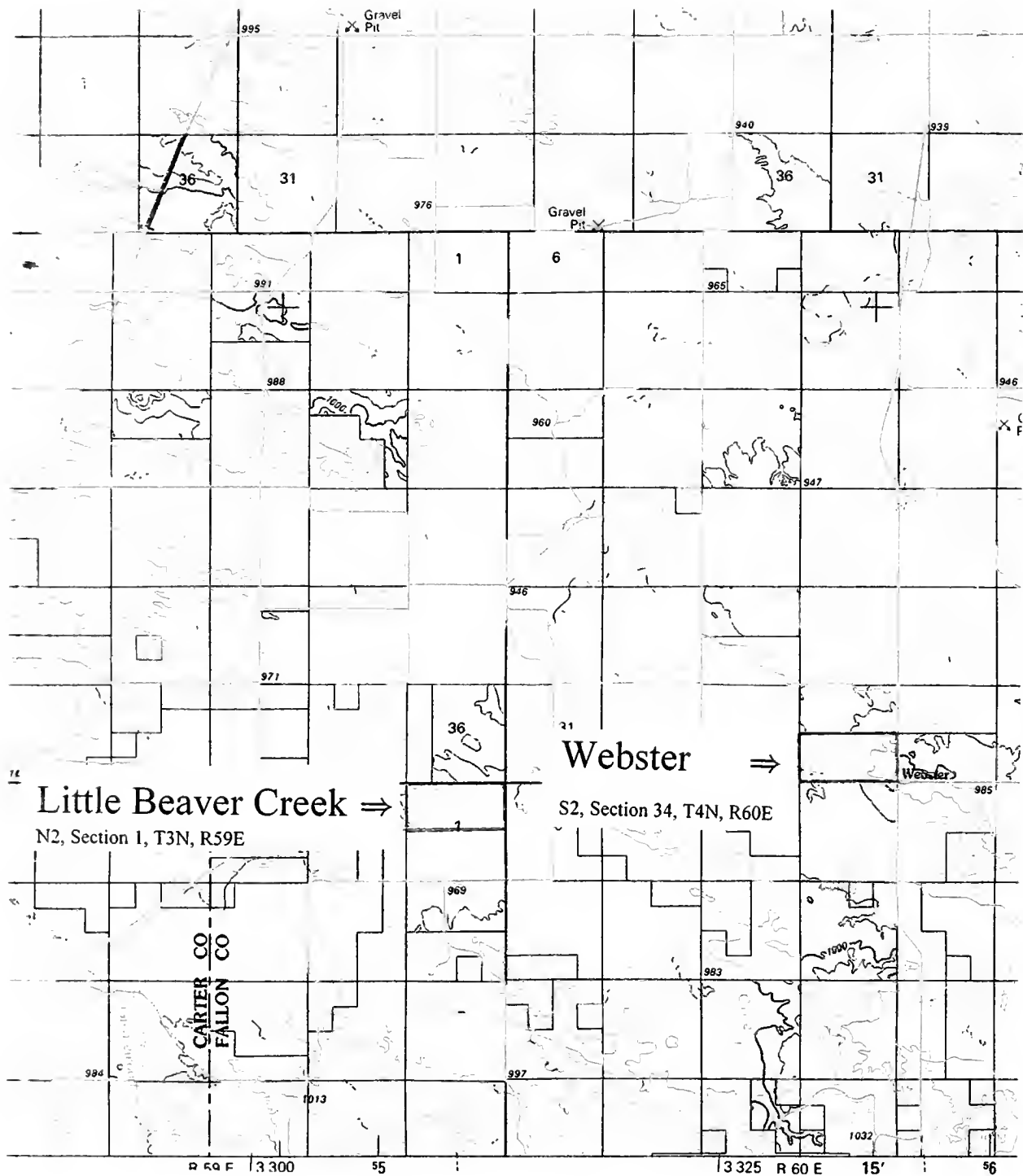


Figure 26 Other BLM Lands



2.2 Alternatives

2.2.1 Proposed Action or Exchange Alternative

As explained in the previous section, this alternative involves the voluntary exchange of all state lands on the Crow reservation for federal lands of equal value managed by BLM. The CBSA mandates an overall exchange of lands equivalent in value to 46,625 acres selected by the state since passage of the Crow Allotment Act in 1920. Of those 46,625 acres once owned by the state, approximately 33,933 acres are still in state ownership. The CBSA places an initial priority for the first five years after passage of exchanging BLM lands for the remaining state land on the reservation. The BLM is expected to initiate a private exchange program that does not involve state land to provide the Crow Tribe with lands the equivalent of approximately 12,700 acres no longer owned by the state.

This overall exchange is being done in phases and the proposed action for this second phase is to exchange the 7109.4 acres identified in Table 2-1 for BLM lands of equivalent value from the 3729.09 acres of BLM land in Table 2-2. Equivalent values established by appraisal, shown later in this environmental assessment, dictate that the state would acquire all of the BLM lands listed in Table 2-2, as well as approximately 440 acres of BLM land in Beaverhead County that were left over in the Phase I exchange.

2.2.2 No Action

This alternative is required by NEPA and MEPA and would be considered a viable alternative if it is determined that no action (i.e. no exchanges) is in the best interest of the state, considering the values received, the annual benefit to the school trust, and the environmental impacts of the proposed action. This alternative will be the result if the state does not exchange lands with the BLM. However, it does not mean that exchanges will not occur, since BLM will still be under a CBSA mandated obligation to provide to the Crow Tribe, through its private exchange program, the equivalent of any lands not exchanged with the state. That is, if any of the 33,933 acres owned by the state are not exchanged, then the BLM private exchange program will be increased by an equal amount of acreage, so that the overall exchange is still based on the value of 46,625 acres.

2.2.3 Mitigated Exchange Alternative

For state land within the Crow Reservation, this alternative has potential for reducing or mitigating specific impacts on current state lessee's ranching operations. This alternative would evaluate various actions that might be taken by the Land Board to mitigate impacts to state lessees. These actions include the potential consideration of delayed implementation until the end of the current lease term to allow more time for a lessee to adjust operations; granting access easements to lessees before the exchange to ensure future access to other lands; making exchanges contingent on an equitable sharing of costs between parties if the exchange requires fencing (tribal resolution requires the non-Indian to fence to keep live-stock from trespass on a tribal lease). Another mitigated exchange that could be suggested and evaluated, but not enforced without Crow tribal concurrence, would be the continued granting of lessee preference for a transitional period of time. The lessee would have to pay more for the grazing lease, but would have some additional time to resolve loss of the lease. The final mitigated exchange alternative would allow state lessees to propose exchanges for less critical deeded lands owned by the lessee (with Crow tribal approval, since the Tribe would ultimately be the recipient of the land). This would occur as a three-way exchange. Deeded private land offered in exchange for state land would be simultaneously exchanged for BLM land. The lessee would retain the former state land, the tribe would receive the former private land, and the state would receive the BLM land.

2.2.4 Selection of other BLM Lands

Another alternative would be to select other lands within the respective boundaries of the BLM Districts and the state land managed by the Eastern Land Office (DNRC). Prior to the selection of lands contained in the proposed action, BLM and DNRC staff met on several occasions in order to develop a list of lands that would be suitable for continued study for disposal and acquisition. DNRC felt the lands studied under this environmental assessment would contain the elements necessary to obtain the approval of the State Land Board.

Fulfillment of the requirements of this act requires the state's voluntary participation, as federal legislation cannot mandate the disposal of state properties without the consent of the State of Montana. Therefore, only BLM lands DNRC is willing to accept are being considered.

Since this is the second phase of a multi-phase exchange program, any lands not discussed in this proposal but later identified for possible acquisition by the state, could be considered in a future proposal. This assessment will only discuss the impacts of disposal and acquisition of the present list of selected lands. This alternative, therefore, will not be analyzed further.

2.2.4 Other Alternatives Considered but Not Carried Forward

An alternative way of accomplishing compensation for the Crow Tribe is to provide money equivalent in value to the value of the state lands and then allow the Tribe to use that money to purchase private fee lands inside the reservation and convert them to tribal trust lands. This alternative would require either amending the CBSA or new legislation that would have Congress appropriate the necessary funds. This alternative was discussed as an option at the November 1995 Land Board meeting. The Crow Tribe did not support opening the CBSA to amendment or new legislation to provide funds for purchasing private lands. The Tribe expressed a specific interest in a return of the state lands which were Tribal trust lands prior to the passage of the 1920 Crow Allotment Act and subsequent selection of lands by the state. Without tribal support for new federal legislation, this option was not considered particularly feasible and the Land Board directed DNRC to proceed with exchanges under the CBSA.

3.0 AFFECTED ENVIRONMENT

This chapter describes the portions of the physical, biological, social and economic environments that would affect or may be affected by the implementation of any of the alternatives for the proposed exchange. This chapter presents the existing conditions as a baseline for the analysis of potential impacts that are examined in Chapter 4.

3.1 BLM Lands

3.1.1 General Geography, Topography and Aesthetics

The BLM parcels in Custer County are located in the Knowlton area about 50 miles east of Miles City. The Knowlton tract is a mosaic of timbered hills and slopes interspersed with open grassland meadows. The Knowlton tract is aesthetically attractive for eastern Montana and is within some of the most productive rangelands in the Big Dry Resource Area, providing multiple benefits from agricultural production, wildlife habitat, watershed, and recreational opportunities. Coal and timber are also potentially valuable resources on the tract. The Knowlton tract and surrounding public lands are some of the more rugged and remote lands in the resource area and offer a "wild" land experience to those that use it.

The Hardscrabble Creek parcel is located in Richland County, approximately 20 miles northwest of Sidney. The area consists of 131.6 acres of farm ground, a 20-acre riparian zone along Hardscrabble Creek, with the remainder of the 320-acre parcel in rolling uplands.

The North Smith Creek Tract consists of four small BLM parcels in southern Richland County, approximately 32 miles north of the town of Wibaux. The area is gently rolling prairie with numerous small buttes present throughout. The area would be classified as badlands.

The Webster parcel is in southeastern Fallon County. The property is directly northwest of the town of Webster, and is bordered on the north, east and south

by state owned lands. The area consists of 320 acres of rolling hills.

The Little Beaver Creek parcel is located in south Fallon County, approximately 23 miles south of Baker and five miles west of Webster. State owned land borders this tract to the north and west. A small section of Little Beaver Creek runs through the north-west corner of this 320 acre tract. The area is mostly rolling hill topography with less than 15 percent slopes.

The Wells Coulee/Otis Creek Tract consists of two small parcels in Richland County, approximately 22 miles northwest of Sidney. The area varies from gently rolling prairie with riparian areas in the draws to steeply rolling prairie with a woody draw dissecting it.

The Morgan Creek parcel is in Dawson County, approximately 17 miles northwest of Glendive. The area is gently rolling prairie with a large ridge that occurs in the west half of the property.

The South Smith Creek Tract is located in Wibaux County, just south of the North Smith Creek Tract, and is approximately 30 miles north of the town of Wibaux. This area consist of steeply rolling prairie with numerous clay and rock outcrops present throughout.

3.1.2 Climate

The climate on the BLM lands is semiarid and continental, with cold winters and warm to hot summers. Climatic information on the parcels is inferred from climatic data collected in Miles City, Glendive, and Sidney. Table 3-1 provides climatic summary information for these cities.

The data suggest that temperatures are slightly cooler and precipitation is slightly greater the farther east and

north the data are collected. This would also probably be true with higher elevation sites such as the Knowlton tract. However, for purposes of this environmental assessment, the BLM lands may be considered to have essentially the same climatic characteristics as the cities depicted in Table 3-1.

Most of the summer precipitation occurs in showers or thunderstorms, with occasional steady rains during late spring or early summer. June is the month of highest precipitation at all three stations and February is the month of lowest precipitation. Precipitation generally falls as snow during late fall, winter, and early spring, although rain can occur in any month. Late spring, summer, and early fall precipitation is almost always rain, but hail is observed frequently during summer thunderstorms. Although precipitation is not plentiful, it mainly occurs during the growing season and is conducive to the growth of herbaceous rangeland species and some deciduous and evergreen trees on the BLM lands.

3.1.3 Groundwater, Geology and Mineral Potential

All of the BLM lands are underlain by the Fort Union Formation, of interlayered claystone, sandstone and coal beds. Continental glaciation deposited a relatively thin veneer of glacial deposits over the Hardscrabble Creek, Wells Coulee/Otis Creek, and North Smith Creek tracts. It appears that the ridge running through the Morgan Creek parcel may be a remnant of younger gravel terraces that continue a few miles to the west. The Fort Union Formation is split into the Tongue River, Lebo and Tullock members (sub-units) from top to bottom. The Tullock and Tongue River members are important regional aquifers, particularly where thicker sandstone and coal beds are present. Typical well yields are in the order of 2-15 gallons per

Table 3-1 Selected Climatic Data Summary

Table 3-1 Selected Climatic Data Summary			
Characteristic	Miles City	Glendive	Sydney
January Avg. Temp. (Max./Min. in °F.)	26.5/6.0	25.6/3.2	22.0/-0.3
July Avg. Temp. (Max./Min. in °F.)	88.5/59.9	88.8/58.5	84.5/54.5
Avg. Total Precipitation (in.)	13.48	13.83	14.05

minute (gpm) with good to poor water quality.¹¹ In areas where coal beds have burned underground the overlying beds are baked into brittle, fractured zones referred to locally as "clinker" or "scoria." These zones are fairly permeable and because they do not erode easily, protect areas from erosion, resulting in hills. Scoria zones form locally important aquifers because they permit infiltration of precipitation and have permeable zones that readily transmit groundwater. Springs with generally good quality water form in discharge zones along the edges of larger scoria deposits.

The Fort Union Formation thins along the edges of the Cedar Creek anticline, where older rocks are exposed in a northwest to southeast trending area between Glendive and Baker. Wells near this area may penetrate below the Fort Union into the Fox Hills Sandstone, a regionally important artesian aquifer.

There are two recorded wells (see Water Rights) on the Knowlton Tract. Springs are indicated on the Webster and South Smith Creek tracts, but there are no water rights filed on these water sources.

The mineral estate for the BLM lands will not be exchanged because the state does not own minerals on its lands within the Crow Reservation. With the exception of an unauthorized gravel pit on one parcel of the South Smith Creek tract, no mineral or material extraction has occurred. A recent review revealed no mining claims on the BLM tracts. A mineral report compiled by the BLM for this exchange concludes:

"All of the subject lands proposed for conveyance to the State of Montana are prospectively valuable for the occurrence of oil, gas, coal, and mineral material (scoria) resources. Development potential for oil and gas ranges from moderate to high. There is no production on any of the tracts.

The Custer County tracts [Knowlton tract] are the only ones with high development potential for coal resources. Those tracts are located within the Knowlton coal field and contain coal of minable thickness. Coal rights in section 2 are owned by the United States, while coal rights in section 11 are under private

ownership. The federal coal in section 2 is not likely to be developed within the foreseeable future. Transfer of surface ownership of that tract to the State of Montana would not likely result in surface owner non-consent which would preclude future federal coal leasing. Transfer of the surface rights in section 11 would have no effect on federal coal leasing.

Mineral materials resources, in the form of scoria, are abundant throughout the region and have the potential for occurrence on the tracts. There are no known pits or permits on any of the subject tracts and development potential is unknown.

There are no geologic or mineral-related reasons which would preclude the conveyance of surface rights of the subject lands out of federal ownership. The proposed conveyance would not interfere with operations under the Mineral Leasing Act".¹²

3.1.4 Surface Water Rights

Table 3-2 identifies water rights on the BLM lands that are involved in this exchange. No water rights are recorded on seven of the eight parcels and tracts.

Section 11 of the Knowlton tract has a stockwater pipeline which extends through the section and to adjacent BLM and private lands. BLM would retain an easement for the pipeline and the water rights associated with the wells. BLM would transfer water rights associated with stock and wildlife use on the Knowlton tract to the state.

Water is available on some of the BLM lands for which no water rights are filed. For example, Hardscrabble Creek, though intermittent, runs through the Hardscrabble Creek parcel and can provide stock water for a portion of the year. There is a spring on the 80-acre portion of the Wells Coulee/Otis Creek tract and beavers have created a pond on a portion of the tract. There are also springs on the Webster and South Smith Creek parcels, as well as stock reservoirs on adjacent lands with pools that extend on to these parcels. There are well and reservoir developments on adjacent state and private lands within the same pasture as portions

¹¹ Montana Ground Water Atlas, (1998) shows specific conductance values in bedrock aquifers in this area ranging from 1000 to 15,000 microsiemens/centimeter at 25° C. Higher values indicate more dissolved solids and hence, lower quality water.

¹² The Mineral Report is included in its entirety as Appendix B.

Table 3-2 Water Rights on BLM Tracts Involved in the Second Crow Boundary Settlement Act Exchange

<p>Table 3-2 Water Rights on BLM Tracts Involved in the Second Crow Boundary Settlement Act Exchange</p>			
Legal Description	Tract Identity/ Water Right No.	Use	Source
Lots 9-12 Section 2; Section 11 T6N, R53E	Knowlton/ 42J-D000390-00, 401- 00,402-00,405-00, and 8237-00	Livestock	Two Wells Three Reservoirs on unnamed trib. of North Fork Sheep Creek
E2 Section 15, T25N, R56E	Hardscrabble Creek	None listed	None listed
NW4NW4, W2SW4, SE4SW4 Section 24; N2NE4, W2NW4, SW4, Section 26; T19N, R59E	North Smith Creek	None listed	None listed
S2, Section 34, T4N, R60E	Webster	None listed	None listed
N2, Section 1, T3N, R59E	Little Beaver Creek	None listed	None listed
SWNW, Section 23 Lot 7, NWSW, Section 26; T26N, R57E	Wells Coulee/Otis Creek	None listed	None listed
W2NW, Section 22, T18N, R55E	Morgan Creek	None listed	None listed
Lots 1, 2, S2NE, SE, Section 2; Section 12; T18N, R59E	South Smith Creek	None listed	None listed

of the North Smith Creek tract. Finally, Little Beaver Creek, which occasionally stops flowing in summer but maintains water in deeper pools, runs through a corner of the Little Beaver Creek parcel.

3.1.5 Vegetation

The Montana Vegetation Types map¹³ lists five vegetation types for the BLM lands involved in this exchange proposal. Table 3-3 indicates tracts in each vegetative type and typical species.

Inspection of the Morgan Creek parcel shows range developed on a gravelly ridge with shallow soils. While this parcel is within the Prairie County Grassland vegetative type, it may not be a typical site. The range appears to be in good condition with vegetative species including Rocky Mountain juniper, silver buffaloberry,

little bluestem, sideoats grama, western wheatgrass, needle-and-thread and yucca.

The Hardscrabble Creek parcel, Wells Coulee/Otis Creek, and South Smith Creek tracts are within the Northeast Grassland vegetative type.

Part of the Hardscrabble Creek parcel has been farmed. Presently, a Land Use Permit authorizes Double J Farms to crop 131.6 acres of the parcel. This area is farmed every year using no-till farming. Hardscrabble Creek flows through this parcel, creating a 20-acre riparian area of good to excellent condition, although it does show some heavy use by livestock. Vegetation associated with the riparian zone includes green ash, cottonwood, American elm, box elder, western snowberry and smooth brome. The unfarmed uplands have also been heavily used and are dominated by western snowberry,

¹³ Payne, G.E., 1973 *Vegetative Rangeland Types in Montana*, Montana Agricultural Experiment Station, Montana State University, Bozeman.

Table 3-3 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)

Table 3-3 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)				
Prairie County Grassland				
Tracts	Grasses	Forbs	Brush	Trees
Morgan Creek	Needlegrass Sandberg Bluegrass Prairie Junegrass Plains Reedgrass Green Needlegrass Plains Muhly Bluebunch Wheatgrass Needleleaf Sedge Needle-and-thread Blue Grama	Broom Snakeweed Scarlet Globemallow Goosefoot	Plains Pricklypear	Absent or Occasional
Northeastern Grassland				
Tracts	Grasses	Forbs	Brush	Trees
Hardscrabble Creek Wells Coulee/Otis Creek South Smith Creek	Little Bluestem Blue Grama Needle-and-thread Western Wheatgrass Plains Muhly Sandberg Bluegrass Green Needlegrass Threadleaf Sedge Needleleaf Sedge Mountain Brome	Broom Snakeweed Fringed Sagewort Phlox Scarlet Globemallow Woolly plantain Wildbuckwheat	Plains Pricklypear Rose Skunkbush Sumac Creeping Juniper	Absent or Occasional
Ponderosa Pine Savannah				
Tracts	Grasses	Forbs	Brush	Trees
Knowlton Tract	Western Wheatgrass Bluebunch Wheatgrass Blue Grama Sandberg Bluegrass Needle-and-thread Little Bluestem Buffalograss Prairie Junegrass Indian Ricegrass Idaho Fescue Sideoats Grama	Phlox Lupine Wild Buckwheat	Skunkbush Sumac Common Snowberry Plains Pricklypear	Ponderosa Pine Rocky Mountain Juniper

Table 3-3 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)

Table 3-3 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)				
Badlands		Grassland		
Tracts	Grasses	Forbs	Brush	Trees
North Smith Creek	Blue Grama Western Wheatgrass Needle-and-thread Buffalograss Sandberg Bluegrass Bluebunch Wheatgrass Plains Muhly Little Bluestem Green Needlegrass Prairie Sandreed	Broom Snakeweed Phlox Wild Buckwheat Scarlet Globemallow Goosefoot	Shadscale Saltbush Greasewood Sagebrush Plains Pricklypear Silver Sagebrush Rabbitbrush Nuttall Saltbush Creeping Juniper	Absent or Occasional
Southeastern		Grassland		
Tracts	Grasses	Forbs	Brush	Trees
Willard Tract Webster Little Beaver Creek	Buffalograss Blue Grama Western Wheatgrass Threadleaf Sedge Sandberg Bluegrass Needle-and-thread Thickspike Wheatgrass Bluebunch Wheatgrass Prairie Junegrass	Plantain Scarlet Globemallow Wild Onion Biscuitroot Fringed Sagewort	Big Sagebrush Silver Sagebrush Nuttall Saltbush Plains Pricklypear	Absent or Occasional

western wheatgrass, threadleaf sedge and some little bluestem.

The Wells Coulee/Otis Creek tract consists of a 40-acre parcel in Wells Coulee and an 80 acre parcel along Otis Creek. The 40 acre parcel is characterized by steeply rolling prairie, with a hardwood draw dissecting the parcel. The parcel has received heavy use by livestock resulting in the vegetation being in poor condition. Vegetation dominating this site includes: American elm, green ash, Rocky Mountain juniper, silver sagebrush, silver buffaloberry, western snowberry, American plum, little bluestem, needle-and-thread and western wheatgrass. The 80- acre parcel is gently rolling with a spring-fed riparian area. The area has received heavy livestock use, except for the riparian zone which appears to be functioning-at-risk. Vegetative species present include: quaking aspen, silver buffaloberry, green ash, American elm, cottonwoods and western wheatgrass.

The range is in excellent condition on the South

Smith Creek tract, with the exception of a small area of riparian habitat adjacent to a spring in the southeast corner of Section 12. Vegetation includes: little bluestem, western wheatgrass, prairie sandreed, prairie junegrass, Rocky Mountain juniper, skunkbush sumac, common chokecherry, creeping juniper, silver sagebrush and big sagebrush.

The Knowlton tract is within one of two "pine hill" areas directly east of Miles City represented by the Ponderosa Pine Savannah vegetative type. The Knowlton tract timber stands are dominated by ponderosa pine which represents at least 50 percent of the habitat type in this tract. There are mature stands of ponderosa pine and many areas of young vigorous stands encroaching in the meadows, as a result of fire suppression. A wide diversity of shrubs are present due to the riparian habitat and woody draws associated with the natural terrain. Green ash, chokecherry, American plum, service berry, hawthorne, snowberry, rose, current and several species of sagebrush are readily found. Grasses and forbs dominate the open lands. The timber and meadow grasslands comprise western

wheatgrass, crested wheatgrass, smooth brome, silver sagebrush, with intermixed needlegrasses, bluestems and bluegrasses. The condition of the range varies from small areas of "poor" condition (where weeds are present) to good.

In the early 1980s, these tracts were mechanically thinned by BLM employees. This treatment has enhanced the overall quality of the timber stands located on these parcels.

The North Smith Creek tract is in the Badlands Grassland vegetative type. The portion of this tract in Section 24 is gently rolling native prairie with numerous small buttes present. The range appears to be in good to excellent condition with the following vegetation dominant: prairie sandreed, little bluestem, needle-and-thread, western wheatgrass and silver sagebrush. Section 26 similarly is gently rolling native prairie with a few clay buttes. The range is in good condition and vegetation is dominated by: little bluestem, prairie sandreed, western wheatgrass, needle-and-thread.

The Webster and Little Beaver Creek parcels are LU Lands (lands which were homesteaded, but later reverted back to federal ownership) which were planted to crested wheatgrass in the 1930s. This vegetation still dominates these parcels, allowing few opportunities for encroachment of native species from adjacent parcels. Other vegetation includes big sagebrush, needle-and-thread, and western wheatgrass.

3.1.5.1 Rare Plants

No threatened or endangered plants are known to exist on the parcels of BLM lands considered for exchange. No inventories have been conducted on most or all of these tracts so no sensitive plant species were detected during a Natural Heritage Program data search.

3.1.5.2 Noxious Weeds

There is a significant noxious weed infestation in the Knowlton area. Leafy spurge exists on the Knowlton tract and has been subject to eradication efforts by BLM and permittees for years. There have been releases of flea beetles for the biological control of weeds in both parcels. Section 2 has an enclosure that contains several flea beetle releases of various species and a USDA-Agricultural Research Service (ARS) research facility. Weeds may be present, but have not been formally documented on the other BLM tracts.

3.1.6 Wildlife Habitat and Fisheries

The Knowlton tract is within a larger complex of other federal, State, and private lands forested with ponderosa pine interspersed with meadows and openings. Wildlife found in the area include, but are not limited to nesting raptors, such as great-horned owls, golden eagles, red-tailed hawks, Swainson's hawks, ferruginous hawks, and kestrels. This habitat is some of the best Merriam's wild turkey habitat found in Montana. The area also supports a large number of neotropical migrants. Other species of wildlife common to this area include mule deer, white-tailed deer, pronghorns, sharp-tailed grouse, bobcats and coyotes. The Knowlton tract has not been classified as crucial or critical habitat.

The 40-acre parcel of the Wells Coulee/Otis Creek tract has been identified as crucial mule deer winter range. On the 80-acre parcel along Otis Creek, there is active beaver use of riparian habitat adjacent to the spring, and many of the aspen trees have been cut. This larger parcel has not been designated as crucial or critical habitat for wildlife.

The Morgan Creek parcel is designated as crucial mule deer winter range.

The Little Beaver Creek parcel provides habitat for sage grouse and pronghorns. With most of the adjacent lands farmed or planted to tame pasture, this habitat is even more important to these species. Several species of non-game birds are known to nest in or adjacent to sagebrush. As such, this island of native range has even more significance. In addition, a prairie dog town of approximately five acres in size is located in the SWNW. A pair of burrowing owls has been documented at this prairie dog town. Burrowing owls and prairie dogs are both classified as a BLM Special Status Species and as Montana Species of Special Interest. A tributary of the South Fork of Beaver Creek flows through the SWNW. Within this drainage were potholes containing water. One pair of pintail ducks were observed on one pothole.

There was no crucial or critical designations on the other BLM tracts, however the usual wildlife common to eastern Montana could be expected to use any of the sites. For example, a flock of turkeys and a small herd of antelope were present on the Hardscrabble Creek

tract during inspection. Ring-necked pheasants were observed in close proximity to both the Hardscrabble Creek and North Smith Creek tracts and four mule deer were bedded down in a brushy site on the North Smith Creek tract during inspection. There is no history of sharp-tailed grouse dancing grounds on any of the sites, but sharp-tailed grouse could use any of the tracts.

The South Smith Creek tract has a large number of clay and rock outcrops which appear to be suitable for nesting raptors. However, field exams yielded only one prairie falcon nest. The area also provides good winter forage and cover for big game and provides excellent habitat for ground nesting birds. Sharp-tailed grouse and mule deer were observed on the tract in October 1996 during a field inspection.

3.1.6.1 Threatened and Endangered Species

None of the BLM lands provide crucial or critical habitat for any threatened or endangered species.

3.1.7 Recreation

All of the BLM lands probably receive some amount of recreational use, particularly those adjacent to roads providing public access during hunting season. However, only the Knowlton tract stands out as being significant from the recreation perspective. The scenic quality was rated as class "A" due to the vegetative mix and dramatic landscape character. This tract and surrounding area receives a blend of recreational activity including big game hunting, turkey hunting, wildlife viewing, pleasure driving, bird watching, Christmas tree cutting and some winter sports. The tract is part of a larger block of federal land that can be reached by an unimproved dirt road from a county road.

3.1.8 Cultural Resources

Land exchanges have been defined by 36 CFR 800.9.b.5., as one of those activities which can have an "adverse effect" on archaeological and historical sites. The proposed land exchange with the State of Montana, as a result of the Crow Boundary Settlement Act, has removed the designation of "adverse effect" due to the fact that the State of Montana has essentially the same requirements for site protection as does the federal government, and no private individuals are involved in the exchange. None of the parcels listed in

this environmental assessment would be traded into private ownership.

In an attempt to facilitate this exchange, and to provide for the requirements of Section 106 of the National Historic Preservation Act; a programmatic agreement was struck between the State of Montana and the Montana State Office of the Bureau of Land Management (BLM) which would allow for the trade of parcels without an inventory. This agreement was reached with the understanding that the BLM archaeological staff would be available to assist with inventories for subsequent developments involving land use changes by the State of Montana, at the discretion of the archaeologist for the Department of Natural Resources and Conservation. This Agreement was signed and became effective in December 1996.

This situation, while advantageous to the process of the exchange, created potential future workload scheduling difficulties for the BLM archaeological staff. To avoid schedule conflicts which might be substantial, BLM staff decided to conduct Class III cultural resource inventories of all proposed parcels before any exchange took place.

The inventories were conducted with the intent that all the sites would only be recorded, and the responsibility for evaluation of those sites, and all subsequent consultation responsibilities, would be left with DNRC on behalf of the state. If any of these lands should be considered for a pooling exchange, or another strategy to comply with the Crow Boundary Settlement Act, all the sites would be evaluated in consultation with the State Historic Preservation Office.

The inventory was conducted using the traditional straight flows-through methodology, spaced 30 meters/100 feet apart over level terrain. Topographical map coverage was used in the rougher portions of the parcels. No features were excluded from inspection with the exception of portions of the Hardscrabble Creek parcel where ground has been broken for agricultural production. A more detailed report of findings will be furnished to the DNRC archaeologist.

3.1.9 Access

With the exception of the Hardscrabble Creek parcel, all of the BLM lands are accessible via walk-in access from public roads, or across other public lands (state or federal) adjacent to public roads. Some lands have

primitive road access directly from public (state or county) roads or across other public lands. The Knowlton tract is accessible to the public via an unimproved dirt road off the county road. Table 3-4 summarizes access to the BLM lands.

3.1.10 Socioeconomics

3.1.10.1 Timber, Grazing and Agricultural Lease Revenue

The Knowlton tract has commercial timber stands of ponderosa pine, along with meadows and interspersed timber and grass that provide grazing. The remainder of the lands have either a grassland or sagebrush/grassland vegetative type suited to grazing. About 132 acres of the 320-acre Hardscrabble Creek parcel has been cropped under an agricultural permit. To date, the BLM has not authorized timber harvest on the Knowlton tract, but all lands have been leased for livestock grazing purposes. Table 3-5 lists the AUM's, or animal unit months for each tract or parcel, along

with an estimate of revenues produced by the BLM grazing permits. The revenue figures were generated by using the 1998 grazing fee and represent only one season of grazing. This grazing fee represents the lowest possible rate (\$1.35/AUM) due to temporary conditions in the market.

3.1.10.2 Payment in Lieu of Taxes

BLM is required by 31 USCA § 6902 to continue to make Payment in Lieu of Taxes (PILT) payments to local governments for the BLM lands that will be transferred to state ownership, as long as the tracts remain in state ownership. Should any of the lands acquired eventually be traded or sold to private entities, then the lands would be taxed by local governments like any other private lands.

Of the five counties where BLM lands are proposed for exchange, only Fallon and Richland counties have more than six percent state land within the counties and are eligible for state equalization payments. Custer, Dawson, and Wibaux counties have less than six

Table 3-4 Access to BLM Tracts in Phase II CBSA Exchange

Table 3-4 Access to BLM Tracts in Phase II CBSA Exchange			
Tract/Parcel	Public Access	Access Type	Accessed From
Knowlton	Yes	Walk in, Vehicular	County road across BLM Lands. Wheel track from county road across BLM lands.
Hardscrabble Creek	No	Vehicular	Private road.
Wells Coulee/Otis Creek	Yes	Walk in, Vehicular	County road across state or BLM land. County road enters corner of 80-acre parcel; Private road accesses 40-acre parcel.
North Smith Creek	Yes	Walk in, Vehicular	Highway 261 across state land. Highway 261 abuts or bisects 3 of 4 parcels-no apparent primitive road access.
South Smith Creek	Yes	Walk in, Vehicular	County road across state land. Primitive road on state land enters private land before continuing to parcels.
Morgan Creek	Yes	Walk in	County road across state land.
Webster	Yes	Walk in, Vehicular	County road abuts two sides. Gate from county road, but no primitive road apparent.
Little Beaver Creek	Yes	Walk in, Vehicular	County road across state land. Primitive road across adjacent state lands.

Table 3-5 Grazing Lease Revenue on BLM Lands

Table 3-5 Grazing Lease Revenue on BLM Lands		
Tract or Parcel/Lessee	AUM's	Annual Revenue ¹⁴
Knowlton Tract / Herzog and Son	270	\$364.50
Hardscrabble Creek / Frank Daniels	58	\$73.80
Morgan Creek / Sam Undem	17	\$22.95
North Smith Creek South Smith Creek / Leon Thrans	402	\$542.70
Wells Coulee/Otis Creek /Elroy Kittleson	36	\$48.60
Webster / Harold Tronstad	70	\$94.50
Little Beaver Creek /Wolenz and Sons	82	\$110.70
Total	935	\$1,262.25

percent state lands and would continue to be below that threshold value even if the proposed exchange occurred. The proposed exchange would add 640 acres of state land to Fallon County and would increase the state equalization payment by about \$76, under the current gross assessment for Fallon County. The exchange would add 926.61 acres of state land to

Richland County and increase the equalization payment by about \$480.

3.1.10.3 Land Values

Table 3-6 lists the values established from the appraisal. It is apparent from the appraisal values that the Knowlton tract and Hardscrabble Creek parcel are

Table 3-6 Appraised Value of BLM Parcels Evaluated in Crow Exchange

Table 3-6 Appraised Value of BLM Parcels Evaluated in Crow Exchange			
Parcel	Land Value	Cumulative Value ¹⁵	Cost/acre
Knowlton Tract	\$455,046.00	\$455,046.00	\$406.29
Hardscrabble Creek	\$58,694.00	\$513,740.00	\$183.42
North Smith Creek	\$50,400.00	\$564,140.00	\$105.00
Wells Coulee/Otis Creek	\$12,028.00	\$576,168.00	\$95.00
Morgan Creek	\$9,200.00	\$585,368.00	\$115.00
South Smith Creek	\$101,060.00	\$686,428.00	\$105.00
Webster	\$36,800.00	\$723,228.00	\$115.00
Little Beaver Creek	\$36,800.00	\$760,028.00	\$115.00
Totals	\$760,028.00		

¹⁴ Revenue is estimated for a single grazing season at the 1998 BLM grazing lease rate of \$1.35/AUM. This rate, like the rate used by the state, is based on a formula that factors in the market price for cattle. However, the BLM rate is at the minimum rate prescribed by regulation and cannot go any lower.

¹⁵ The cumulative value can be compared to the total land value of the state lands on the Crow Reservation to determine approximately the point at which successive addition of BLM lands will provide equivalent value to the state lands. In this case, the state lands value (\$1,035,410.00) exceeds the value of all of the BLM lands by \$278,382.00.

Table 3-7 Streams on BLM Tracts Included in the Phase II CBSA Land Exchange (with approximate lengths)

<p>Table 3-7 Streams on BLM Tracts Included in the Phase II CBSA Land Exchange (with approximate lengths)</p>		
Tract/Parcel	Stream Segment	Approx. Length(mi.)
Knowlton	Unnamed tributary of N. Fork Sheep Creek	2.0
Hardscrabble Creek	Hardscrabble Creek	0.5
Wells Coulee/Otis Creek	Unnamed tributary of Otis Creek	0.1
Morgan Creek	None	0.0
North Smith Creek	Unnamed tributary of Smith Creek	0.2
South Smith Creek	Unnamed tributary of C.S. Creek	0.2
Webster	Unnamed tributary of Little Beaver Creek	0.3
Little Beaver Creek	Little Beaver Creek	0.2

generally more valuable, acre for acre, than the lands that offer only grazing potential. It is also noted that the cumulative value of the lands on the Crow Reservation proposed for this exchange exceeds the value of the BLM lands in southeastern Montana by \$278,382.00. This means that the residual value¹⁶ of the BLM lands not used in the first, or Phase I, exchange must roughly equal or exceed \$278,382.00, or State lands will have to be dropped from this proposed exchange to equalize values.

3.1.11 Hydrologic and Soil Resources

Table 3-7 lists the approximate mileage of intermittent streams on the BLM lands that are being evaluated for exchange. Of these, the 80-acre parcel in the Wells Coulee/Otis Creek tract and Section 12 in the South Smith Creek tract have springs on them that probably provide water for a short distance on a year-around basis. In some cases, there are stock water dams either on the parcel or on adjacent lands such that the stock water pond that extends into the parcel (Knowlton tract, Webster and South Smith Creek: See Water

Rights). None of the reservoirs or springs are large enough or reliable enough to support fisheries, but they do provide habitat for aquatic life adapted to prairie ponds and waterfowl.

While there may be a thin veneer of alluvial (water deposited) soils along some streams, soils generally have developed *in situ* over the underlying geologic materials. These parent materials, along with climate, vegetation, relief, and time are the primary factors that have led to soil formation.¹⁷ Table 3-8 shows the general soils types expected at each tract, based on a soils map of Montana developed by the Soil Conservation Service, in cooperation with the U.S. Forest Service, Montana Agricultural Experiment Station, and Montana State University.

¹⁶ Residual value is the value of BLM lands originally proposed but not included in the Phase I exchange proposal in Beaverhead county. They are lands left over that can be included in the second exchange proposal to equalize values.

¹⁷ Brady, N.C., 1974. *The Nature and Property of Soils*. McMillan Publishing, New York, NY.

Table 3-8 General Soils for BLM Exchange Tracts

Table 3-8 General Soils for BLM Exchange Tracts		
Tracts/Parcels	General Soils Description	Uses
Hardscrabble Creek North Smith Creek Wells Coulee Otis Creek	On the eastern glacial till plains, Mollisols ¹⁸ and Entisols ¹⁹ occur on the rolling plains, with Entisols dominating the hilly sections.	Rangeland and Dry Land Farming
Knowlton	Soils are generally Entisols and Aridisols ²⁰ of the grasslands and shrublands.	Rangeland and Dry Land Farming
Morgan Creek South Smith Creek Webster Little Beaver Creek	Soils of the southeastern plains include Entisols, Mollisols, and Inceptisols ²¹ , with Mollisols dominating the gently rolling hills and Entisols and Inceptisols on the steeper slopes.	Rangeland and Dry Land Farming

3.2 State Lands

3.2.1 General Geography, Topography and Aesthetics

The state lands involved in this exchange are generally located in the northeastern quadrant of the Crow Reservation in south central Montana. The area is part of the Rocky Mountain Foreland²², a transitional zone between the true plains and the Rocky Mountains. The Crow Reservation offers a wide variety of geographic and topographic settings, ranging from alpine (over 9,000 ft.) in the Bighorn Mountains to riparian floodplains (2,800-3,000 ft.) along the Bighorn and Little Bighorn rivers. Generally the state lands that are proposed for exchange (See Table 2-1) exist between these two extremes in foothills and along intermittent drainages. Most consist of grassland or grassland/sagebrush tracts that are utilized as part of a larger dryland grazing complex. Three of the parcels have some minor timber (mostly Ponderosa Pine) along northeastern aspects and along drainages. None of the parcels are completely fenced, although some are partially fenced or have fences running through the parcels.

Most of the State lands are in gently rolling hills with sometimes deeply incised drainages or gullies. Many parcels have the only developed water in the area, while others are dependent on water developments on adjacent lands to be effectively used for grazing. Views from each parcel are generally expansive, but typical of grazing lands on the Reservation and in southeastern Montana.

3.2.2 Climate

The Crow Reservation has a continental climate with cold winters and warm to hot summers. In Hardin, the July average daily maximum temperature is 90° F, with an average minimum of 55° F. In January the average maximum and minimum temperatures are 32° F and 6° F, respectively. Precipitation varies with elevation from around 10 inches per year along the Big Horn River between St. Xavier and Hardin, to over 30 inches in the Pryor and Bighorn mountains. All of the tracts of State land involved with the exchange are in a zone of 15-20 inches of annual precipitation, with just over half that coming in the growing season months of April through July.

¹⁸ Mollisols are soils with deep, dark, relatively fertile topsoil (mollic epipedon) formed under grassland vegetation of the steppes and prairies.

¹⁹ Entisols are recently formed soils resulting from a variety of influences that interrupt or impede the pedogenic process, such as erosion on poorly vegetated sites.

²⁰ Aridisols are soils of arid regions that are dry more than 50 percent of most years and not moist as much as 90 consecutive days when the soils are warm enough for plant growth.

²¹ Inceptisols are "embryonic" soils with few diagnostic features, usually associated with resistant bedrock or extreme positions on the landscape, like steep slopes.

²² Rocky Mountain Foreland is an environmental region more fully described in the First Annual Report, Montana Environmental Quality Council, 1972.

3.2.3 Groundwater, Geology and Mineral Potential

The reservation includes parts of the folded Middle Rocky Mountains, represented by the Bighorn and Pryor mountains, and the western portion of the Powder River Basin which includes the bulk of the reservation. The high topography in the southwestern part of the reservation is due to the uplift and folding of the Bighorn and Pryor mountains, which include primarily Paleozoic rocks, including the fairly distinctive limestones of the Madison Group which form the sides of Bighorn Canyon. The Wolf and Rosebud Mountains along the eastern side of the reservation result from the eroded, upturned margins of younger, Paleocene strata that extend eastward into the Powder River Basin. The Fort Union formation, known for its coal beds is the primary formation, with the Tullock, Lebo, and Tongue River Members of that formation, present on the eastern side of the reservation. Between these higher zones are lower areas, dominated by late Cretaceous formations. These units are dominated by thick, dark grey shales with some sandstone units and localized bentonite beds. From the latest to the earliest, these include the Hell Creek Formation, known for the dinosaur fossils it has produced, which is composed of alternating beds of sandstone and shale and some lignite. The Fox Hills Sandstone is Gray to white, fine to medium grained, non-calcareous sandstone. The Bearpaw Shale (Pierre Shale) is a dark gray, partly silty to sandy shale with abundant bentonite beds and scattered concretions. The Judith River Formation is buff to tan, massive sandstone, fine to coarse grained, partly sand-and-pepper. Some lignite and coal seams are present. Claggett Shale is a dark gray to gray shale. The Eagle Sandstone is white, fine to medium grained sandstone with individual cliff-forming beds up to 50 feet thick. Terraces and flood-plain deposits exist along the Bighorn and Little Bighorn rivers and along some perennial streams like Pryor Creek and Lodgegrass Creek.

The Halfway House Coulee and Eychaner Coulee parcels are underlain by the dark grey shales of the Bearpaw Shale. The Onion Creek parcel is underlain by Judith River Formation. Ash Creek and North Fork Reno Creek parcels are located on upper Hell Creek. The lower Hell Creek Formation has some groundwater and underlies the West Fork Tullock Creek, South Fork Reno Creek and Reno-Tullock Divide parcels,

and some erosional remnants of the Tullock Member of the Fort Union Formation also exist on these parcels. The East Fork Tullock Creek, Tullock Divide, and Reno-Davis Divide parcels are underlain by either the Tullock Member or both the Tullock and Lebo Members of the Fort Union Formation. The Middle Fork Davis Creek parcel is located on the Tongue River and Lebo Members of the Fort Union Formation. There are some minor, relatively shallow, Quaternary alluvium and Tertiary terrace deposits noted on the Halfway House Coulee, Onion Creek, South Fork Reno Creek, East Fork Tullock Creek, West Fork Tullock Creek, and Middle Fork Davis Creek.

Groundwater potential is closely tied to the geology of the Crow Reservation. The only areas where relatively high volumes of good quality water are available are in the alluvium along the major rivers and streams. Because alluvium is limited in extent and relatively shallow, none of the areas where the State tracts exist are particularly conducive to the production of either large quantities or good quality groundwater. Small amounts of water good enough for stock watering have been obtained from some of the sandstone units of the Fort Union, Hell Creek, and Fox Hills Formations. There is a functioning stock water well on the West Fork Tullock Creek parcel. There are also wells that do not appear to be in use on the Tullock Divide, Onion Creek, and West Fork Tullock Creek parcels. There are springs or seeps on the Middle Fork Davis Creek and Reno-Davis Divide parcels. Grapevine Creek appears to have some portion of its flow sustained by groundwater discharge, possibly because of the increase in head maintained by Yellowtail dam.

The mineral potential of the state tracts is also tied to underlying geology. Coal exists under the eastern edge of the reservation, particularly in the Tongue River Member of the Fort Union Formation. Oil and gas could exist virtually anywhere on the reservation and several active oil fields produce in the Ash Creek, Soap Creek, Lodgegrass, and Grey Blanket Creek areas. Sand and gravel is available in the alluvium along the streams and rivers. Some geologic units have medium to high potential for bentonite, gypsum, clinker (fire baked shale from burnt coal beds) and limestone. The state has no subsurface ownership on any of the reservation parcels, so it is not giving up any potential mineral values, nor is it gaining any in this exchange.

3.2.4 Surface Water Rights

Table 3-9 identifies water rights on the 15 state tracts within the Crow Reservation that are involved in this exchange. Five of the 15 tracts have no water rights recorded on them.

Because the traditional pattern of grazing involves pasture units much larger than the state parcels, circumstances arise where the water right on a state parcel can be critical to the use not only of the state lease, but also of the surrounding non-state grazing leases. The same is true when a state parcel does not have water, but depends on a water source on a nearby

Table 3-9 Water Rights on State Tracts Involved in the Second Crow Boundary Settlement Act Exchange

Table 3-9 Water Rights on State Tracts Involved in the Second Crow Boundary Settlement Act Exchange			
Legal Description	Tract Identity/ Water Right No.	Use	Source
N2NW4, SE4NW4, NE4, N2SE4 Section 16, T1S, R36E	E. Fork Tullock Creek	None	None
Section 36, T1S, R35E	Ash Creek	None	None
Section 36, T1S, R36E	Tullock Divide/ 43P-W-025019, W- 025020, W-025021	Stockwater Well and Reservoir and Spring	UT ²³ E. Fork Tullock Creek and Fort Union Formation
Section 36, T2S, R36E	W. Fork Tullock Creek/ 43P-W-025009	Stockwater Well	Lance formation
S2SW4, S2SE4 Section 16, T3S, R33E	Halfway House Coulee/ 43P-W-190136	Irrigation (40 acres)	Bighorn Canal
W2SW4, Section 36, T3S, R34E	Onion Creek/ 43O-W-047506	Stockwater Use	Onion Creek
Section 16, T3S, R36E	Reno-Tullock Divide	None	None
Section 36, T3S, R35E	N. Fork Reno Creek/ 43O-W-025018	Stockwater Reservoir	Medicine Tail Coulee
Section 21, T4S, R37E	Reno-Davis Divide/ 43O-W-047519, W- 047520, W-047521, W-047522, W-047523, W-047524	Stockwater Reservoir, Springs and Instream Stockwater Use	UT Reno Creek and Fort Union Formation
NE4NW4, S2NW4, N2SW4, SW4SW4, Section 16, T4S, R38E	Middle Fork Davis Creek/ 42A-W-047525, W-047526	Springs and Instream Stockwater Use	Middle Fork Davis Creek
Section 36, T5S, R33E	Eychaner Coulee	None	None
SE4, Section 2, T5S, R36E E2, Section 11, T5S, R36E	S. Fork Reno Creek/ 43O-W112092	Stockwater Use	S. Fork Reno Creek
Section 1, T6S, R30E Section 2, T6S, R30E	Grapevine Creek/ 43P-W-137355, 43P-W-137354	Stockwater Use	Grapevine Creek

²³ UT denotes Unnamed Tributary of

lease to make it fully useable for grazing. A description of the circumstances involving the importance of water to each lease follows.

The East Fork Tullock Creek parcel has no developed water source. Grazing use must rely on water that flows intermittently in the East Fork Tullock Creek just to the south or from Tullock Creek about .75 miles west of the parcel. Wells are also developed about 1.5 miles southeast and 1 mile northeast of the parcel.

Similarly, the Ash Creek parcel has no developed water, but intermittent flows in Ash Creek and springs about one half mile for the southeast corner of the parcel provide the nearest water. The springs are in another pasture south of the fence along the southern side of the parcel.

The Tullock Divide parcel has a well (that appears inoperative at the present time), a stock water reservoir in the northern portion, and springs near the southern boundary. These are important water sources for grazing on the parcel and on the surrounding lands.

The West Fork Tullock Creek parcel has two wells. One, near the southeast corner appears to be inoperative, while the other in the northwestern portion of the section is functioning and provides water for grazing of this parcel and adjacent lands. There are occasional intermittent flows and some storage reservoirs along the West Fork Tullock Creek immediately to the east of the parcel.

The Halfway House Coulee parcel has the Bighorn Canal running south to north through the western margin of the parcel, with about 10 acres of the 160 acres lying west and below the canal. There is a water right for irrigation of 40 acres of this parcel, but it does not appear to have ever been perfected and the parcel remains native rangeland. Livestock can use water from the canal during irrigation season, but there is no developed water on the parcel to support winter grazing unless water remains in pools in the canal.

There is a well in the northwest corner of the Onion Creek parcel, but it is inoperative and because Onion Creek is intermittent, the parcel has no reliable water source. Another well is shown on the map about .5 miles west of the parcel, but the condition and operability of the well are unknown.

The Reno-Tullock Divide parcel has no developed water, with the nearest water source a well about .75 miles northeast of the northeast corner.

The North Fork Reno Creek parcel has a stock water reservoir in the northwest corner that provides reliable water to this parcel and adjacent lands. The nearest other reliable sources are two reservoirs about two miles east and west of the parcel. A reservoir about .5 miles south of the parcel appeared to be dry during an October 1997 inspection.

The Reno-Davis Divide parcel has a stock water reservoir in the southwest quarter and a spring in the north of the section that both provide reliable water to this parcel and surrounding lands.

The Middle Fork Davis Creek parcel has reliable water from flows in Middle Fork Davis Creek and from an excavation that intercepts ground water in the shallow alluvium. This parcel also provides water to adjacent lands, although there are two wells and three reservoirs within a mile of the parcel to the northwest, southwest, east, and south.

There are no water sources on the Eychaner Coulee parcel, but there are three stock water reservoirs within .75 miles to the west and southwest.

South Fork Reno Creek tract has South Fork Reno Creek running the length of the two adjacent state parcels, but because the creek is intermittent, there is no reliable developed water on the tract. There are springs just outside the northeast corner and about .25 miles west of the tract and a well a few hundred yards from the tract along the eastern boundary.

Grapevine Creek runs through both of the two sections comprising the Grapevine Creek tract. Grapevine Creek is a small perennial stream and provides reliable water to the tract. Grapevine Creek is more deeply incised as one travels upstream (west to southwest), making it more difficult for access by livestock. Reliable water, along with fencing and natural barriers make this tract somewhat self-contained.

3.2.5 Vegetation

The Montana Vegetation Types map²⁴ lists five vegetation types on the Crow Reservation. Lodgepole pine-Douglas-fir forest occurs in the Bighorn Mountains and

²⁴ Payne, G.F., 1973 Vegetative Rangeland Types in Montana, Montana Agricultural Experiment Station, Montana State University, Bozeman.

in the foothills north of the Pryor Mountains. Eastern Montana ponderosa pine forest occurs in the Wolf Mountains and on a small portion of the Crow reservation immediately south east of Billings. Three state parcels fall within this vegetation type boundary. Two parcels are represented by ponderosa pine savannah, which occurs in the northeastern edge of the reservation.

Most of the lands involved in the second exchange fall into one of the last two vegetation types on the reservation. The Central Grassland vegetation type occurs in the vicinity of Hardin and extends about 20 miles east and west and about 15 miles up the Bighorn and Little Bighorn drainages. The Foothill Grassland type covers the rest of the reservation. Table 3-10 shows the state lands that fall in each vegetative type and the species that typically occur.

3.2.5.1 Rare Plants

Rare plants have not been identified on any of the state lands that are proposed for exchange. The state lands may, in some cases, provide habitat conditions that would be suited to some of the rare plants that occur or which have historically occurred in the area. Table 3-11 lists those rare plants known to have occurred within the Crow Reservation, along with some of their habitat characteristics. Of those species listed, three are known to exist or known to have existed within 10 miles of state lands that are evaluated for this exchange. Sweetwater Milkvetch (*Astragalus aretioides*) occurs on limestone outcrops near Bighorn Canyon within 2 miles of the Grapevine Creek tract. Joe-Pye Weed (*Eupatorium maculatum*) is known to exist along a riparian bottom of East Cabin Creek about 6 miles from the Grapevine tract. Wyoming Sullivantia (*Sullivantia hapemanii*) also occurs in at least three locations along riparian bottoms of East Cabin Creek, Black Canyon and Box Canyon, all of which are south of Bighorn Canyon and within 10 miles of the Grapevine Creek tract.

3.2.5.2 Noxious Weeds

Noxious weeds are usually exotic plants that proliferate and reduce the value of land for agriculture, forestry, livestock, wildlife, and other beneficial uses. Noxious weeds spread rapidly, out compete most native species

and have at least some of the following characteristics:

1. Continuous seed production during the growing season
2. Highly efficient seed dispersal
3. Persistent banks of seeds or seedlings
4. Capability for growth in adverse climates and soils
5. Capability to reproduce through seeds, sprouts, and rhizomes
6. Few natural controls^{25, 26}

On the Crow Reservation, several noxious weeds are known to be established. Spotted knapweed is typically initially spread along travel corridors and occurs as isolated infestations along Interstate 90 near Hardin and the Wyoming border; near Fort Smith; along the Edgar-Pryor road; and along Highway 212 near the eastern boundary of the reservation. Leafy spurge occurs west and southwest of Pryor, near the western edge of the reservation, and in the Lodgegrass and WYOLA areas. Resource specialists with the Tribe have indicated that Russian knapweed, dalmatian toadflax, sulfur cinquefoil, hounds tongue, Canada thistle, hoary cress, common burdock and field bindweed occur either on or adjacent to some of the state exchange tracts.

No noxious weed infestations have been inventoried on state lands, but some parcels may have non-noxious weed infestations related to grazing pressure or favorable habitat conditions. No specific weed problems were identified during site inspections of the parcels in October 1996, but some snow cover and the timing of inspections during a season when weeds are less readily identified contributed to the failure to observe specific weed problems.

3.2.6 Wildlife Habitat and Fisheries

With its varied topography, the Crow Reservation provides a wide variety of habitat for a number of species. There are 64 small mammal species known to exist on the reservation. Ten large mammals, including mountain lion, black bear, elk, white-tailed deer, mule deer, and moose also live on the reservation. Seasonally, there are as many as 261 different bird species. Five amphibians and 15 reptiles are known to occur on the reservation.²⁷

²⁵ Montana Department of Agriculture, 1981, Weed Training Manual, Helena, MT.

²⁶ McDonald, P. and C. Tappeiner, 1986, "Weeds," Journal of Forestry, 84(10):34-37.

²⁷ Crow Tribe Resource Development Technical Reports, Oct. 1977, "Wildlife", prepared by Rocky Mountain Research Corporation, p. 5-1 to 5-34.

Table 3-10 Vegetative Type Characteristics for State Lands (distinguishing species in bold)

Table 3-10 Vegetative Type Characteristics for State Lands (distinguishing species in bold)				
Central Grassland				
Tracts/Parcels	Grasses	Forbs	Brush	Trees
East Fork Tullock Creek Ash Creek Halfway House Coulee Onion Creek	Blue Grama Western Wheatgrass Needle-and-thread Sandberg Bluegrass Green Needlegrass Bluebunch Wheatgrass Plains Reedgrass Prairie Junegrass Plains Muhly Threadleaf Sedge Needleleaf Sedge	Fringed Sagewort Broom Snakeweed Phlox Wild Buckwheat Scarlet Globemallow	Sagebrush Plains Pricklypear	Absent or Occasional
Foothills Grassland				
Tracts/Parcels	Grasses	Forbs	Brush	Trees
Reno-Tullock Divide North Fork Reno Creek Middle Fork Davis Creek Grapevine Creek Eychaner Coulee	Bluebunch Wheatgrass Western Wheatgrass Idaho Fescue Sheep Fescue Needle-and-thread Mountain Brome Pumpelly Brome Thickspike Wheatgrass Bluegrass Sandberg Bluegrass Prairie Junegrass Green Needlegrass Blue Grama	Western Yarrow Clubmoss Lupine Phlox	Douglas Hawthorne Saskatoon Serviceberry Western Chokecherry Russet Buffaloberry Rose	Quaking Aspen
Ponderosa Pine Savannah				
Tracts/Parcels	Grasses	Forbs	Brush	Trees
Tullock Divide West Fork Tullock Creek	Western Wheatgrass Bluebunch Wheatgrass Blue Grama Sandberg Bluegrass Needle-and-thread Little Bluestem Buffalograss Prairie Junegrass Indian Ricegrass Idaho Fescue Sideoats Grama	Phlox Lupine Wild Buckwheat	Skunkbrush Sumac Common Snowberry Plains Pricklypear	Ponderosa Pine Rocky Mountain Juniper
E. Montana Ponderosa Pine Forest				
Tracts/Parcels	Grasses	Forbs	Brush	Trees
Reno-Davis Divide South Fork Reno Creek	Needle-and-thread Blue Grama Little Bluestem Western Wheatgrass Sandberg Bluegrass Prairie Junegrass Bluebunch Wheatgrass Sideoats Grama Threadleaf Sedge Needleleaf Sedge Bluegrass	Phlox Wild Buckwheat Lupine	Skunkbrush Sumac Western Snowberry	Ponderosa Pine Rocky Mountain Juniper

Table 3-11 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur within Yellowstone and Bighorn Counties (Lesica and Shelly 1991; MNHP Database 1996)

<p>Table 3-11 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur in Yellowstone and Bighorn Counties (Lesica and Shelly 1991; MNHP Database 1996)</p>						
Species Common Name	USFWS	USFS/ BLM	Global/ State	Habitat Type	Habitat Present on State leases	Flowering/fruitleg Phenology
<i>Astragalus aretioides</i> Sweetwater Milkveteh	None	None W	G4/S2	Limestone soils on exposed ridges 4,000-7,800 ft	No	June/July
<i>Astragalus barrii</i> Barr's Milkveteh	None	S W	G3/S3	Gullied limestone knolls 3,000-4,000 ft	No	June/July
<i>Astragalus grayi</i> Gray's Milkveteh	None	None None	G4/S1	Sandy Clay dry sagebrush steppe 3,700-5,500 ft	Unknown	June
<i>Carex gravida</i> var <i>Gravida</i> Pregnant Sedge	None	None W	G5/S1	Moist, riparian and deciduous forest soils 3,900-4,000 ft	No	July
<i>Centaurium exaltatum</i> Western Century	None	None	G5/SH	Moist alkaline soils around streams and ponds on the plains	Unknown	August
<i>Cleome lutea</i> Yellow Bee Plant	None	None W	G5/S1	Open sandy soils of sagebrush steppe 4,000-4,600 ft	Unknown	June/July
<i>Conioselinum scopulorum</i> Hemlock Parsley	None	None W	G4/S1	Riparian forests and moist valley meadows 3,700 ft	No	July
<i>Dalea enneandra</i> Nine-anther Dalea	None	None W	G5/S1	Gravelly, grassland slopes on the plains 2,100-3,100 ft	No	July-Sept.
<i>Eleocharis rostellata</i> Beaked Spikerush	None	None W	G5/S2	Wet, often organic soils around springs 2,700-6,100 ft	Unknown	Unknown
<i>Erigeron bellidiastrium</i> Western Fleabane	None	None None	G5/SU	No habitat data available	Unknown	Unknown
<i>Eupatorium maculatum</i> var <i>Bruneri</i> Joe-pye Weed	None	None W	G5TU/ S1	Moist meadows, riparian forest openings 3,700 4,200 ft	No	July/August
<i>Gratiola ebracteata</i> Bractless Hedge-Hyssop	None	None None	G4/S1	Muddy soil of pond margins 3,200-5,200 ft	Unknown	June-August
<i>Grayia spinosa</i> Spiny Hopsage	None	None W	G5/S1	Dry, sandy, often calcareous soil on shrub steppe 4,200-5,000 ft	No	May/June
<i>Lomatium nuttallii</i> Nuttall Desert-Parsley	None	None W	G3/S1	No habitat information available	Unknown	Unknown
<i>Mentzelia nuda</i> Bractless Mentzelia	None	W W	G5/S1	Sparsley vegetated, gravelly soil on slopes 2,100-2,500 ft	No	Unknown
<i>Physalis hederifolia</i> var <i>Comata</i> Prairie Ground Cherry	None	None None	G5/SU	No habitat information available	Unknown	Unknown
<i>Physaria didymocarpa</i> var <i>Lanata</i> Woolley Twinpod	None	None None	G5/SU	No habitat information available	Unknown	Unknown
<i>Potentilla plattensis</i> Platte Cinquefoil	None	None W	G4/S1	Grasslands and sagebrush steppe 6,000-8,000 ft	No	June
<i>Rorippa calycina</i> Persistentsepal Yellowcress	None	W W	G3/S1	Wet sand, mud along ponds, rivers in the plains 2,000-2,500 ft	No	May-July

Table 3-11 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur within Yellowstone and Bighorn Counties (Lesica and Shelly 1991; MNHP Database 1996)

<p>Table 3-11 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur in Yellowstone and Bighorn Counties (Lesica and Shelly 1991; MNHP Database 1996)</p>						
Species Common Name	USFWS	USFS/ BLM	Global/ State	Habitat Type	Habitat Present on State leases	Flowering/fruiting Phenology
<i>Stipa lettermanii</i> Letterman's Needlegrass	None	None None	G5/S1	No habitat information available	Unknown	Unknown
<i>Sullivantia hapemanii</i> Wyoming Sullivantia	None	None W	G3/S1	Wet, open, steep calcareous slopes 3,700-4,600 ft.	No	June/July
<i>Viburnum lentago</i> Nannyberry	None	None None	G5/S1	Riparian forests, aspen groves on valleys and plains 1,900-4,400 ft.	No	June

USFS Key:

- W - Watch species
- S - Sensitive species

Global/State Key:

- G2 - Imperiled because of rarity (6-20 occurrences), or because of other factors demonstrably making it vulnerable to extinction.
- G3 - Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction throughout its range because of other factors; in the range of 21 to 100 occurrences.
- G4 - Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- G5 - Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- S1 - Critically imperiled in State because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or

Other Codes appended to Global Rank:

- Q - Taxonomic question or problems involved, more information needed.
- T - Rank for a subspecific taxon appended to global rank for full species.
- G denotes Global rank; S denotes State rank

The state lands on the reservation provide excellent habitat suitable for antelope, mule deer, and for some upland game birds. Some of the stock water ponds provide seasonal waterfowl habitat. Generally, these habitats are little used by game species because of year-around hunting by Crow tribal members, combined with no bag limits, and relatively easy 4-wheel drive access.

There are excellent fisheries in the Bighorn River, and fair to good fisheries in the Little Bighorn and other perennial streams. None of the state lands except Grapevine Creek have perennial streams and no fisheries are known to exist in the stock water ponds on state lands. The U.S. Fish and Wildlife Service surveyed Grapevine Creek searching for pure strain Yellowstone cutthroat trout, but found it is barren of fish and has an impassable barrier near its mouth.²⁸

3.2.6.1 Threatened and Endangered Species

The Crow reservation provides historic habitat for grizzly bear, wolf, and black-footed ferret, although none of these species presently exist there. Occasional bald eagle and peregrine falcon use occurs on the reservation, but none of the state lands involved in the exchange have been linked to this occasional use.

There are no known occurrences of threatened or endangered species on any of the state lands involved in this exchange proposal. None of the lands involved have any habitat critical to any threatened or endangered species. One species of special concern, the spotted bat (*Euderma maculatum*) occurs in the Bighorn Canyon vicinity, which is within two miles of the Grapevine Creek tract. Habits of spotted bats are not well known, but they may forage for food as far away as the Grapevine Creek area.

²⁸ Personal communication with Clay Gregory, BIA, February 10, 1998.

3.2.7 Recreation

Due to lack of access (See Access), there is little, if any, recreational use of these state lands. There may be some use of the lands by tribal members for hunting or other purposes. The Halfway House Coulee parcel is accessible from Highway 313, but it also appears to have little recreational use.

3.2.8 Cultural Resources

A class I survey (literature review) of the state lands reveals five cultural resource sites (24BH261 to 24BH265) in Sec. 1, T6S, R30E, and an unrecorded surface stone feature site in Sec. 2, T6S, R30E (both are included in the Grapevine Creek tract). Under the Programmatic Agreement for Cultural Resources, a professional cultural resource inventory and evaluation will only be necessary if the agency ultimately receiving the title to the parcels proposes a land use change that would endanger potential cultural resources.

3.2.9 Access

The state lands on the Crow Reservation do not have legal public access, with the exception of the Halfway House Coulee parcel, which has Highway 313 passing along its western edge. The lands are all surrounded by a combination of fee (private) lands, Tribal lease lands or individual Tribal allotments. Tribal members may have access to the state lands across the Tribal lease lands or allotted lands and fee owners can reach these lands from their adjacent ownership, but the lands are not legally accessible to the general public.

In all cases except the Halfway House Coulee parcel, primitive roads and four-wheel drive tracks provide access to the state parcels. However, these roads are considered private and provide access exclusively to the lessee or are used cooperatively by adjacent landowners and lessees to reach their respective lands. In some cases, a specific easement or right-of-way may

have been granted. For example, the road through the Grapevine Creek tract has a right-of-way issued to the Campbell Farming Corporation and a road through the South Fork Reno Creek tract has a right-of-way issued to the Faddis-Kennedy Cattle Company.

3.2.10 Socioeconomics

3.2.10.1 Timber and Grazing Revenue

There are no commercial timberlands on the state lands involved with this exchange, although there are trees large enough to be logged on the Ash Creek, Reno-Davis Divide and Reno-Tullock Divide parcels. Grazing revenues are the only source of income from these state lands at this time. Table 3-12 summarizes the revenue producing status of the state lands in 1998. Overall, on a dollars/acre/year basis, these lands will produce an average of \$1.22 per acre in 1998, or \$8,676.59. Two leases (Grapevine Creek and Reno-Davis Divide) have substantially higher AUM rates because of competitive bidding for the leases. Leases for the other tracts average about \$1.00/acre/year. This is similar to other state lands off the reservation, but is substantially less than the market for private grazing on the Crow Reservation, which may go as high as \$5.00 per acre (about \$20.00/AUM).²⁹

Revenues from grazing and timber harvested from common school trust lands are considered "distributable revenues." That is, 95 percent of these receipts flow directly to the state general fund where they are distributed through the school equalization account for the maintenance of the common schools. The remaining 5 percent is deposited into the permanent school trust. Figure 3-1 shows how these revenues are allocated. Revenue produced from the lands acquired in the exchange must be equal or greater than the revenue produced from the exchanged lands in order for the Land Board to approve the exchange. In other words, acquired lands must be capable of producing each year, over the long-term, at least as much as the \$8,667 being produced annually by the state lands in this exchange.

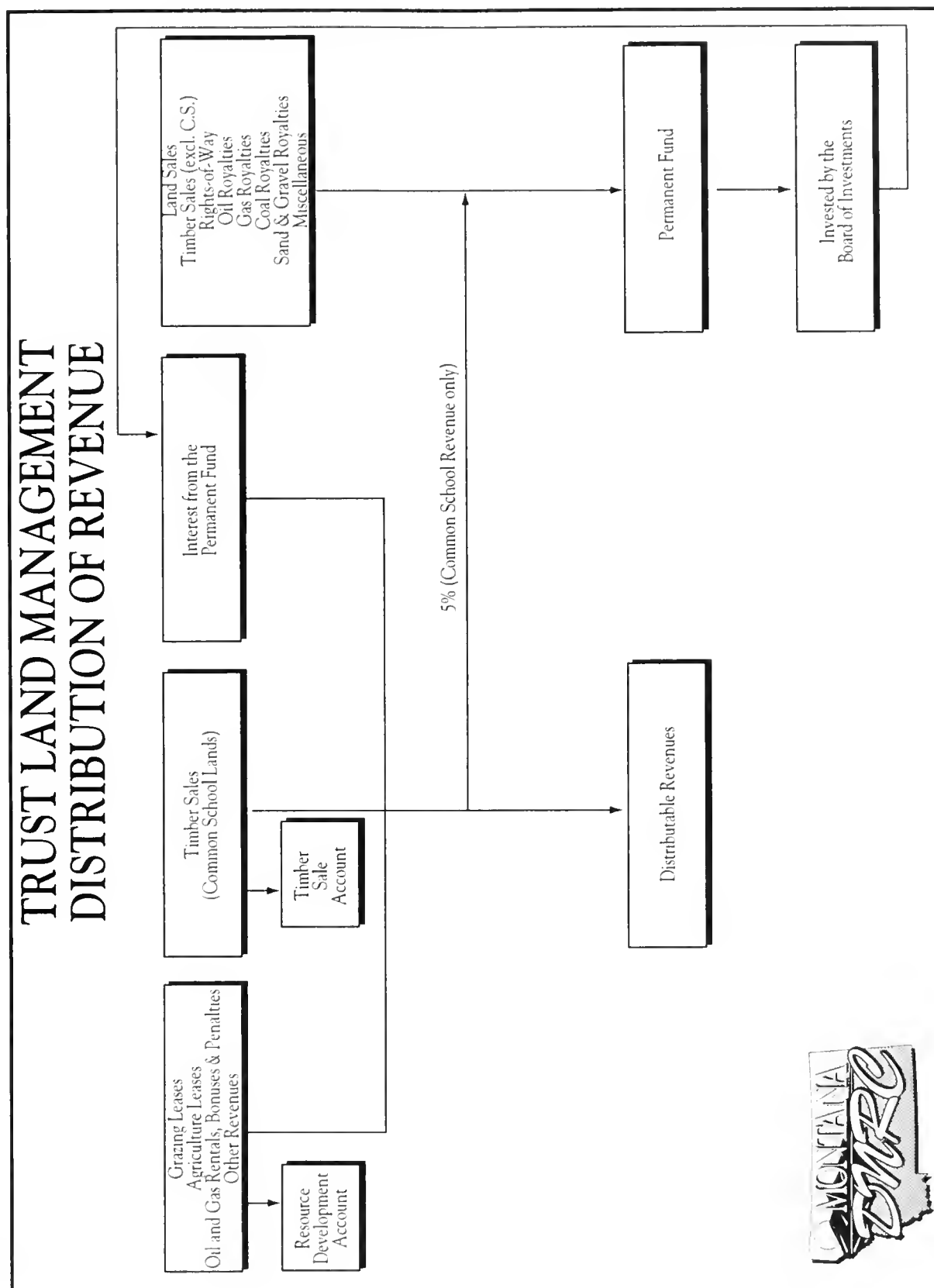
²⁹ Information provided by the BIA and Crow Tribe indicates that, depending on competition for leases, tribal lease rates may vary from \$1.00 to as high as \$10.00 per acre (or about \$4.00 to \$40.00/AUM). These extremes are relatively infrequent and \$5.00 per acre was considered more indicative of the actual market for both tribal and private leases.

Table 3-12 Current Revenues from State Lands Proposed for Exchange (in Dollars)

Table 3-12 Current Revenues from State Lands Proposed for Exchange (in Dollars)							
Identity and Parcel Size	State Revenue Sources					Revenue Recipients	\$/Acre/Year
	Grazing ³⁰	Outfitting	Agriculture	Cabin Site	Total Revenue	Common Schools	
E. Fork Tullock Creek 360 Acres	\$324.81				\$324.81	\$324.81	\$0.90
Halfway House Coulee 160 Acres	\$160.40				\$160.40	\$160.40	\$1.00
Eychaner Coulee 640 Acres	\$577.44				\$577.44	\$577.44	\$0.90
S. Fork Reno Creek 480 Acres	\$625.56				\$625.56	\$625.56	\$1.30
M. Fork Davis Creek 240 Acres	\$216.54				\$216.54	\$216.54	\$0.90
Ash Creek 640 Acres	\$577.44				\$577.44	\$577.44	\$0.90
Tullock Divide 640 Acres	\$526.26				\$526.26	\$526.26	\$0.82
W. Fork Tullock Creek 640 Acres	\$587.12				\$587.12	\$587.12	\$0.92
Onion Creek 109.4 Acres	\$107.40				\$107.40	\$107.40	\$0.98
Reno-Tullock Divide 640 Acres	\$515.52				\$515.52	\$515.52	\$0.81
N. Fork Reno Creek 640 Acres	\$730.32				\$730.32	\$730.32	\$1.14
<i>Reno-Davis Divide</i> 640 Acres	\$2,057.00				\$2,057.00	\$2,057.00	\$3.21
<i>Grapevine Creek</i> 1280 Acres	\$1,670.78				\$1,670.78	\$1,670.78	\$1.31
Total State Parcels	\$8,676.59				\$8,676.59	\$8,676.59	\$1.22

³⁰ Parcels in bold type are leases issued after July 1, 1993 at a lease rate of \$4.01/AUM, while regular type denotes a pre-1993 lease rate of \$3.58/AUM. Leases that resulted from competitive bidding have variable rates above these minimum rates and are listed in italics.

Figure 3-1 Trust Lands Revenue Flow Chart



3.2.10.2 Payment in Lieu of Taxes

Since Big Horn county does not have more than six percent state ownership, it receives no equalization payments from the state. This exchange would not change that status. Equalization payments made by the state are similar to the Payment in Lieu of Taxes (PILT) payment that the federal government makes to counties with federal ownerships, but no state payment is made unless the state land base exceeds six percent of the total land base of a county. The final result of the land exchange will be the transfer of title of the state lands to the federal government to be held in trust by the Bureau of Indian Affairs for the Crow Tribe. Since the federal government does not make PILT payments for Indian trust lands, there will be no net change in funding of local governments in Big Horn county as a result of this exchange.

3.2.10.3 Land Values

The appraisal of state lands on the Crow Reservation shows their highest and best use continuing as grazing lands. The total value of the lands, as established by a comparative sales appraisal, is \$1,038,410.00. In addition, improvements on these lands were valued separately because of the necessity of compensating the current lessee for authorized improvements as a condition of the exchange. Improvements on these lands totaled \$52,150.00. Table 3-13 shows the values for the lands on the Crow Reservation at the time of appraisal.

Table 3-13 Appraised Value of State Parcels on the Crow Reservation

Table 3-13			
Appraised Value of State Parcels on the Crow Reservation			
Parcel³¹	Land Value	Improvements	Total
East Fork Tullock Creek	\$54,000.00	\$2,625.00	\$56,625.00
Ash Creek	\$96,000.00	\$1,500.00	\$97,500.00
Tullock Divide	\$96,000.00	\$6,400.00	\$102,400.00
West Fork Tullock Creek	\$96,000.00	\$9,575.00	\$105,575.00
Halfway House Coulee	\$25,600.00	\$1,400.00	\$27,000.00
Onion Creek	\$16,410.00	\$1,125.00	\$17,535.00
Reno-Tullock Divide	\$83,200.00	\$1,875.00	\$85,075.00
North Fork Reno Creek	\$96,000.00	\$6,400.00	\$102,400.00
Reno-Davis Divide	\$115,200.00	\$7,300.00	\$122,500.00
Middle Fork Davis Creek	\$38,400.00	\$4,800.00	\$43,200.00
Eychaner Coulee	\$76,800.00	\$1,500.00	\$78,300.00
South Fork Reno Creek	\$24,000.00	\$1,200.00	\$25,200.00
South Fork Reno Creek	\$48,000.00	\$1,200.00	\$49,200.00
Grapevine Creek	\$83,200.00	\$3,750.00	\$86,950.00
Grapevine Creek	\$89,600.00	\$1,500.00	\$91,100.00
TOTAL	\$1,038,410.00	\$52,150.00	\$1,090,560.00

³¹ The South Fork Reno Creek and Grapevine Creek tracts each consist of two adjacent parcels, which were appraised separately and are both shown in this table.

3.2.11 Hydrologic and Soil Resources

Except for Grapevine Creek, all of the drainages on the state lands are intermittent drainages and are usually dry most, if not all, of the year. Table 3-14 summarizes the drainages and the stream miles on the state lands. There are three small stock water reservoirs on the Tullock Divide, North Fork Reno Creek, and Reno-Davis Divide parcels which may provide some aquatic habitat for waterfowl, frogs, turtles, and aquatic insects. Most of these reservoirs evaporate in dry years, so no fisheries are supported. There also is an excavation along the drainage in the Middle Fork Davis Creek parcel that intercepts shallow groundwater and acts like a small reservoir. Intense local thunderstorms

during summer and "chinook" winds that rapidly melt snow cover in winter can lead to runoff in these intermittent drainages. Major runoff can be accompanied by severe erosion and gullying, particularly on state lands underlain by erodible Bearpaw and Claggett shales. Some lands have "badlands" developing where poor soils, little vegetation, and occasional, high intensity runoff occurs.

There is a complex variety of separately mapped units of different soil types on the 15 state parcels. In general, all of the soils on the state lands have developed in place or "in situ" on the underlying geologic formations, except for relatively small areas where alluvial and terrace soils are deposited along drainages. Table 3-15 shows which lands fall into generalized soil groups.

Table 3-14 Streams Included in the CBSA Land Exchange

Table 3-14 Streams Included in the CBSA Land Exchange (with approximate lengths)		
Tract	Stream Name -Crow Reservation (Intermittent unless otherwise noted)	Approximate Stream Length (miles)
East Fork Tullock Creek	No streams on parcel	0
Ash Creek	Unnamed tributary of Ash Creek	1
Tullock Divide	Unnamed tributaries of East Fork Tullock Creek	1.8
West Fork Tullock Creek	Unnamed tributary of West Fork Tullock Creek	.7
Halfway House Coulee	Halfway House Coulee	.5
Onion Creek	Onion Creek	.2
Reno-Tullock Divide	Unnamed tributary of West Fork Tullock Creek Unnamed tributary of Custer Creek Unnamed tributary of North Fork Reno Creek Willow Creek	1.5 .2 .5 .3
North Fork Reno Creek	Medicine Tail Coulee	.4
Reno-Davis Divide	Reno Creek Unnamed tributary of Reno Creek	.5 .5
Middle Fork Davis Creek	Middle Fork Davis Creek	.7
Eychaner Coulee	Unnamed tributaries of Rotten Grass Creek	2.0
South Fork Reno Creek	South Fork Reno Creek	1.5
Grapevine Creek	Grapevine Creek (perennial)	1.7

Table 3-15 General Soils for State Lands Exchange Tracts

<p>Table 3-15 General Soils for State Lands Exchange Tracts</p>		
Parcels/Tracts	General Soils Description	Uses
Middle Fork Davis Creek Reno-Davis Divide South Fork Reno Creek	Soils of the southeastern plains include Entisols, Mollisols, and Inceptisols, with Mollisols dominating the gently rolling hills and Entisols and Inceptisols on the steeper slopes.	Rangeland and Dry Land Farming
East Fork Tullock Creek Ash Creek Tullock Divide Reno-Tullock Divide West Fork Tullock Creek Halfway House Coulee Onion Creek	Soils of the clayey-shale plains are primarily Aridisols and Entisols, with Entisols dominating the badlands and "breaks" along rivers.	Rangeland and Dry Land Farming
Eychaner Coulee North Fork Reno Creek Grapevine Creek	Soils of the high foothills are mostly Mollisols, with some Inceptisols. On lower foothills, benches, and terraces, the soils include Mollisols, Aridisols, and Entisols.	Rangeland and Dry Land Farming

The high percentage of silt and clay content in underlying shales produces soils that are clayey to loamy and which have good water holding capacity. High clay content inhibits rapid infiltration of water, so short duration precipitation events tend to only wet the surface layer and not penetrate to any depth. This makes driving access on unimproved roads nearly impossible when soils are wet and also is responsible for the tendency to have runoff resulting in gulying. Soils developed over more sandy units tend to have loamy characteristics, take on water faster and dry out faster and are not as prone to gully and badlands formation. Nearly all of the soils on the state lands are more conducive to native grazing than farming, so none of the soils have been cultivated, although dryland grain crops could be raised on small portions of some parcels if it were economical to do so.

4.0 CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

The impact analysis of the Proposed Action (see definition of Proposed action and alternatives in Section 2.0) starts from the premise that the proposed

exchange will occur between public agencies and that the impacts of the exchange will stem solely from differing management policies or proposed changes in the basic land use that would occur if the exchange were consummated. In the case of a proposal for changing the land use of a tract, that action would be subject to additional review beyond the scope of this EA and a separate or tiered EA would have to be completed before that action could take place. In addition, the Programmatic Agreement on Cultural Resources would require a cultural survey and evaluation which meets federal standards when a land use change is proposed. Both of these processes will provide additional checks and opportunities for public comment which could modify any future proposed action. Therefore, this EA will not attempt to describe impacts for future actions which cannot be fully anticipated at this time.

Analysis of the No Action alternative will look at the consequences of not exchanging lands as proposed. The Mitigated Exchange alternative will look at various options available to the Land Board and BLM to complete the exchange but still mitigate some of the impacts to the various affected parties and/or resources.

4.1 Impacts of the Proposed Action

4.1.1 General Geography, Topography and Aesthetics

The proposed action will have no effect on the general setting of any of the BLM lands, with the possible exception that future timber sales and harvest on the Knowlton tract may change the viewshed and aesthetic appeal by the addition of roads, by a short-term reduction in timber volume and by changes in the age class distribution of timber. The effects of any proposed timber sale would have to be addressed in a separate environmental assessment.

No impacts are anticipated to the geography, topography or aesthetics of the state lands on the Crow Reservation as a result of this exchange.

4.1.2 Climate

No climate-related impacts are anticipated as a result of the proposed exchange.

4.1.3 Groundwater, Geology and Mineral Potential

On the BLM lands, no impacts are anticipated to groundwater, geology, or to present or future mineral potential as a result of the proposed exchange. Because BLM will retain sub-surface ownership, it is possible that unanticipated future mineral development might preclude surface uses by the state. Should oil and gas development be proposed upon these lands, the state would be given notice pursuant to the Surface Owner Damage and Disruption Compensation Act, §§ 82-10-501, et. seq., MCA. Should hard rock mineral development be proposed upon these lands by any means other than hand tools, the state will be given notice pursuant to the Landowner Notification Act, §§ 82-2-301, et. seq., MCA.

No impacts would be associated with the exchange to the state lands, as long as livestock grazing continues as the primary use of the lands. Prior to the 1920 Crow Allotment Act, the state lands were originally Tribal trust lands and subsurface ownership was retained by

the Department of Interior, in trust for the Crow Tribe, when the state was granted lands on the Crow Reservation. If mineral development should occur in the future, there could be impacts to the surface uses and to groundwater (for example, with oil and gas drilling, or open pit coal mining). None of these potential uses can be anticipated at this time and future environmental assessments would be required if such development were to be proposed.

4.1.4 Surface Water Rights

Water rights on BLM lands would not be affected by this transfer. BLM would maintain an easement to a portion of pipeline and the associated waters in the Knowlton area. The other existing water rights held by BLM are all for stock or wildlife use from wells, stockwater ponds or direct use from streams. These rights and uses are appurtenant to the land and would transfer to the state and continue for the purposes designated. The value of the water rights would be incorporated into the appraised value of the BLM lands and would be part of the basis for exchange value determination. Because the state will accept current BLM lessees as the lessees of record, lessees will continue to have the enjoyment of any established water rights under state management, just as they had under BLM management.

For stock water rights on state lands, where the place of use and point of diversion are the same place (for example, a stock water pond on state land on the Crow Reservation) the water right associated with that use is appurtenant to the land. This means that the water rights developed on state lands in this exchange will transfer with the parcels to the United States to be held in trust for the Crow Tribe. In most cases, the development needed to provide water to fulfill the right was done by the lessee of the state parcel. The water right becomes an improvement on the property for use and enjoyment by the lessee, but does not become the lessee's water right. The improvement (stock water dam) may be compensable by the party that ultimately reaps the future benefit of that improvement, which in the case of this exchange, would be the Crow Tribe. State law provides: "If any State land is exchanged on which there are improvements belonging to a lessee and some person other than the lessee is the transferee, that person shall settle with the lessee for all improvements on the land belonging to the lessee

before the exchange is completed.”³² Appraisals of the state lands have separated improvements such as stock ponds from the basis for exchange value, because it cannot be ensured that current lessees will continue to have full use and benefit of these improvements. The value of the improvements will become the basis for compensation to the current lessee for any improvements that are appurtenant to the land. The eventual recipient of the state lands, the Crow Tribe, would be responsible for compensation.

Current lessees may be affected by the loss of the state lease, because the water on the state parcel may provide stock water for a much larger area than just the State lease. If the lessee loses access to the water, then their livestock operation may be impacted beyond the loss of the lease and the water improvements on it. They may be forced to haul water, develop new water sources (if that is possible), or may have to abandon the use of adjacent lands because of lack of stock water.

On the other hand, state tracts that depend on off-site water developments may impact future Tribal lessees in the same way if there is no access to the water developed off the state parcel following the exchange.

4.1.5 Vegetation

The primary impact that could be anticipated following the exchange is related to future timber harvest on the BLM lands known as the Knowlton tract. While the Knowlton tract presently provides habitat conditions favorable for mule deer, turkeys and raptors, these conditions may not be sustainable at current levels over the long-term without additional fuel management that reduces the risk of fire. If this tract becomes state land through exchange, the state will, at some time, implement timber management actions designed to produce revenue to the school trust, reduce fuels and the risk of wildfire, and maintain sustainable habitat for wildlife.

Timber management on state land is guided by the State Forest Land Management Plan with its associated Resource Management Standards and Guidelines. State land ownership patterns that are not in large, contiguous blocks, such as the Knowlton tract, are managed to restore a semblance of historical conditions. In general, for eastern Montana ponderosa pine stands, a determination of the stand age class distribution and

site conditions leads to the development of a silvicultural prescription. Silvicultural prescriptions (treatments) ensure potential commercial timber production over time for predicted re-entry harvests in 20-50 years and provide for a residual forest structure of old age trees (leave trees). Typically this is accomplished by the harvest of 40-60 percent of the standing commercial timber. The leave tree selection is based on the form and health of the tree. Typically, the best formed and healthiest trees display the best genetic characteristics and are selected as leave trees to provide a seed source for regeneration. In certain cases, leave trees are selected because of known wildlife use (such as raptor nests and turkey roosts)

The shrub and herbaceous vegetation, given adequate precipitation and time, responds favorably to timber harvest activities. Reduction of dead needles on the ground, canopy cover and competition for available space and nutrients can benefit indigenous vegetative species and the exotic species and noxious weeds in the area. This may affect both the short and long term grazing potential following timber harvest. Care will have to be taken during and after harvest to ensure harvesting activities contribute as little as possible to the spread of existing weed infestations.

Roads developed for commercial timber harvest on state land are normally removed from service through reclamation at the completion of the sale. The soil disturbances could create additional noxious weed and weedy vegetation spread. Reclamation generally involves mechanical ripping of the road surface followed by application of native seed. Erosion control measures are implemented to ensure the road surface maintains erosion control qualities. Although reclaimed roads normally would not be used for routine access, they would continue to provide administrative access for legitimate activities such as weed control. Except for the currently existing roads, roads developed for timber harvest would not be designated routes for vehicular public access.

Each proposed timber sale on state land is subject to the Montana Environmental Policy Act (MEPA) which calls for recognition and mitigation of environmental impacts.

There are no planned changes in the uses of BLM lands other than the Knowlton tract, and it is anticipated

³² MCA §77-2-206. Settlement for improvements.

that the current BLM lessees will continue to use the lands in exactly the same way after they become state lessees. Because the state and BLM calculate carrying capacity by different methods, there may be some slight differences in the number of AUM's allowed under state management. Depending on the range condition, this could mean either increases or decreases in stocking levels. Despite differing carrying capacity methods, neither the state nor the BLM condone or permit overgrazing on their lands.

There are no planned changes in the use of the present state lands for grazing following the proposed exchange. The only potential impacts to vegetation to the state lands resulting from the exchange would result from different grazing policies or enforcement of policies that allowed changes in the current stocking levels of livestock. This could result in either more or less grazing than presently occurs. More grazing could result in overgrazing, which would lead to increased erosion, and might alter species composition on the state lands, including introduction and spread of weeds. Less grazing, over time, might also result in a species composition shift towards native species in proportions closer to what existed before livestock grazing was introduced.

The primary impacts to the existing lessees are the increase of AUM prices, and the loss of attachment of AUM's to a fixed base. Under the existing formula, the standard value for an AUM on BLM lands in 1998 was set at \$1.35. The state fee for these lands is set at \$4.01/AUM in 1998. Lessees would also be given a 10-year lease at the time of conveyance, which would supplant the lease which is "fixed" to base property under BLM regulations. At the end of the ten-year term, the lessee would have the opportunity to match any competitive bid offered on the parcel.

Grazing policies and enforcement practices are sufficiently vague when comparing the State to Tribal trust leases, that any prediction of future impacts would be purely hypothetical. It is assumed that both the state and the Tribe have vested interests in the long-term productivity of these lands. Therefore, stocking levels will probably remain similar following the exchange and impacts, if any, will be negligible.

4.1.5.2 Rare Plants

Lack of a rare plant survey make it impossible to know whether there would be impacts to rare plants on the BLM or the state parcels as a result of the exchange.

4.1.5.3 Noxious Weeds

Certain noxious weeds have a tendency to spread along travel corridors especially vehicle trails. There is a potential for the spread of noxious weeds on the Knowlton tract, the only BLM tract with commercial timber stands, and especially so, if additional road development occurs. The potential for commercial timber harvest would require the managed development of a road system. Most of the infestation occurs in areas that are not particularly accessible by road. Herbicides have been applied primarily by hand or by the use of special-equipped ATV's. While road development may provide avenues for the spread of noxious weeds, roads also would provide better access for treatment applications and may reduce the cost of the present treatment program.³³ Logging might bring additional weed species such as knapweeds which are not yet a problem here, but this potential already exists and would continue under present BLM management and access.

USDA/ARS and BLM have a small exclosure established in section 2, T6N, R53E for research and collection of flea beetles (for biological control of noxious weeds). BLM and ARS could maintain use and access to this site by establishing and retaining easements prior to the exchange, as proposed for the roads and stockwater pipeline on this tract. Both agencies could also secure a permanent easement or Land Use License for the ingress and egress to the exclosure after the exchange. BLM has been treating leafy spurge throughout this area since 1983 with assistance from the permittees. Although weed control is normally the responsibility of the lessee on state lands, the Trust Land Management Division has committed to funding noxious weed treatment annually for a 10-year period after the exchange. DNRC would cooperate with BLM for continuation of the established biological control program.

No noxious weeds were observed on the state parcels. However, to the extent that new roads, wheel tracks, or other vehicular access routes are required to implement the exchange (such as alternate access routes because

³³ Treatment, used in conjunction with well-established leafy spurge stands, consists more of efforts at containment to stop the spread of this noxious weed, since eradication of established stands is virtually impossible.

of loss of access on a State parcel), these routes would become potential invasion routes for noxious weeds that tend to spread along travel routes (spotted knapweed, Canadian thistle, etc.).

4.1.6 Wildlife Habitat and Fisheries

There are no perennial streams on the BLM lands being acquired in this exchange, so no fisheries impacts are expected. Grapevine Creek, the only perennial stream on State land, is very small, has no fishery, and would not be affected by this exchange.

The state has no immediate plans for timber sales on acquired BLM lands, but does have a mandate to return the highest value to the school trust through responsible resource management. This mandate would eventually cause the state to attempt to sell timber on the Knowlton tract. Such an action would have to be addressed in a separate environmental assessment. There would be both negative and positive impacts that would result from timber harvest on this tract. Even though this EA cannot address specific impacts of a future timber sale, the following discussion addresses some of the general impacts that might result from timber harvest.

Timber harvest on this tract would have short-term adverse impacts to many species of wildlife including big game security habitat. In the worst case, removal of conifer canopy could inhibit mule deer winter use and might increase vulnerability during hunting season. The impacts and their severity would depend on the amount of timber harvested, the method of harvest, the amount of new roads and whether they are subsequently closed or remain open, and many other factors that cannot be known and will not be addressed unless the exchange actually occurs and a timber sale is proposed. Another impact related to timber harvest is that it would reduce, but not eliminate, the number of large trees used by roosting turkeys and nesting raptors. Since there already has been logging on state and private lands in the area, the cumulative effect of the loss of roosting and nesting trees on turkeys and raptors in the area would have to be addressed in the environmental assessment for any proposed timber sale.

Deferring or even stopping the harvest of timber would not guarantee that these impacts will not occur. The intermixture of timber and grass in what is usually a

dry, hot summer environment creates a substantial fuel load and a risk of loss of the entire timber resource of the Knowlton tract to fire in any year. Recent fires have burned extensive areas of timber on adjacent lands to the west of the Knowlton tract. Although detrimental effects are associated with timber harvest, it can also benefit wildlife habitat by compartmentalizing and reducing fuels, thereby reducing the risk of large fires. Timber harvest may provide more grass, forb and shrub forage and may increase the grazing capacity of the parcel for a period of time until new timber growth again shades the understory and restricts herbaceous growth.

During the scoping meetings, some concerns were raised over the prospect of lands being converted from native range to cropland following the exchange with the state. Such conversions, if they occurred, could have detrimental effects on wildlife dependent on native range. A moratorium on the breaking of new ground on state lands was recently lifted after nearly 10 years. Both the moratorium and the decision to lift the moratorium reflect trends in the Conservation Reserve Program (CRP) and the relative availability and price of agricultural crops. While it is possible that a new lessee could make an application to convert native range to cropland, DNRC has a specific policy on breaking ground and evaluates each request against the criteria in the policy before granting or denying the request. The policy requires consultations with appropriate agencies, including Fish, Wildlife and Parks, and compliance with the Montana Environmental Policy Act and Montana Antiquities Act before a request can be approved. No conversions of rangeland to a different land use are contemplated at this time by the state. The state policy is attached as Appendix C.

BLM lands that would be acquired under the proposed exchange, for the most part, are not conducive to being converted to cropland. The exceptions to this general rule are portions of the Webster and Little Beaver Creek parcels in Fallon County. Other surrounding lands, similar to these BLM lands, are now being cultivated and the potential exists for cultivation of portions of these parcels. On the Little Beaver Creek parcel, cultivation would probably eliminate the prairie dog town and the pair of burrowing owls known to use burrows in this town. Both are BLM Special Status Species and are Montana Species of Special Interest. State grazing leases do contain standard language regarding the control of pests, which include prairie

dogs. However, since the listing of the black-footed ferret as an endangered species, the state has not been actively requiring elimination of prairie dogs, and certainly would not require such action if it would result in the elimination of a non-target species such as burrowing owls or black-footed ferrets.

Wildlife habitat would continue to be good to excellent on the state parcels on the Crow Reservation, but because of hunting policies, ease of access, and lack of escape cover, the parcels would continue to be under used by species heavily hunted by tribal members. All parcels on the reservation are expected to continue as native rangeland under the Tribal leasing program.

4.1.6.1 Threatened and Endangered Species

There are no known threatened or endangered species living on or dependent on either the BLM or the state parcels. No impacts are anticipated to any threatened or endangered species as a result of the exchange.

4.1.7 Recreation

Recreational opportunities on the BLM lands would remain essentially the same as under BLM management (with the exception of the Knowlton tract, where subsequent timber harvests might have potential affects on naturalness, solitude, visual, wildlife and vegetation resources). The main difference will be that a State Lands Recreational Use Permit would be required for recreational pursuits that were open to the public at no additional cost under BLM management.¹⁴ The cost of a permit is \$10/year/person for all individuals between 18 and 59 years of age. Persons between 12 and 17 or over 60 can get a permit for \$5. Children under 12 do not need a permit and a family permit (up to 6 members of the same household) costs \$20. Other impacts to recreationists would be the limitation of ORV travel to roads petitioned to be opened or those upon which the BLM would retain a road easement. At present, state lands can be included in Block Management programs, whereas BLM lands cannot be entered into the program without first publishing a Notice of Closure in the Federal Register. Such a notice would first require an environmental analysis to assess the impacts of such a proposal.

The affected BLM lands are designated as possessing "limited access" for public recreational purposes. Limited access is defined by the Big Dry RMP as being limited to existing roads and trails, with a one-time exception for retrieval of game animals. On state lands, travel is allowed only on routes opened through a petition for travel through the regional office. However, in this case, BLM would secure easements for certain roads or trails within the Knowlton tract as a condition of the exchange. The retention of these easements would ensure these routes remain open and mitigate any impacts regarding access to adjacent BLM lands as a result of the proposed exchange.

The degree of ORV use on BLM lands specifically included in this exchange is not known, but is not considered to be extensive or excessive. State lessees, like BLM lessees, are entitled to any legitimate ORV use (mending fence, spraying weeds, etc.) and are not restricted like recreationists to designated routes and existing roads. Further, use of restricted roads by handicapped individuals is allowed on state lands for persons possessing a Department of Fish, Wildlife and Parks handicap sticker (permit to hunt from a vehicle).

Concerns have been expressed that recreational access might be restricted after the exchange by a lessee on state lands who petitions DNRC for a closure. Closures are normally only granted for a specific limited period of time for good cause (e.g. extreme fire danger or to spray weeds. In cases where the BLM has secured a public access easement as part of the exchange, it would be difficult to grant or enforce any closure without concurrence by the BLM.

State lands are open to camping, just as BLM lands are. However, camping on state land is limited to two days, and only within 200 feet of a legal, customary access point, while it is open for 14 days on BLM land. It does not appear that this restriction will be of great consequence, except possibly at the Knowlton tract, which has the most significant recreational use. With the relative abundance of adjacent BLM lands accessible by road through the Knowlton tract (nearly 3,000 acres of BLM land bounds the Knowlton tract), even this camping duration limitation cannot be considered significant, since camps can either originally be made on BLM lands or moved to BLM lands after two days if

¹⁴ Recreation on BLM land is not "free", since the use and management of that use is funded by federal tax dollars that every taxpayer pays, whether they seek recreation on a particular parcel, or not. Because state lands have a specific mandate to return revenue to the common schools, recreation on state land is considered a benefit that is compensable through a fee to those that actually use state land for recreation; while those who do not, pay no fee.

a longer camping experience is desired. The camping restriction does not limit the continued use of state lands for other recreational purposes.

On the Crow Reservation, only the Halfway House Coulee parcel was legally accessible to the public for recreational use. Since non-Indians are not allowed to hunt big game on the reservation, the Halfway House Coulee parcel receives very little recreational use and that probably would not change as a result of the exchange. The state has the right to require non-Indian recreationists to hold a recreational use license when pursuing recreational activities on state school trust lands, even though they are within the bounds of a reservation. That requirement probably extends to tribal members also, but the issue becomes clouded and practically unenforceable when tribal treaty rights to hunt and fish on the reservation are taken into account. As a practical matter, because it sometimes is difficult to ascertain if someone is a tribal member, it is difficult to enforce the recreational use permit on the reservation. Exchanging these lands may result in fewer persons in this area purchasing state land recreational use licenses, but that impact is probably negligible in terms of the total number of licenses sold in the State.

Acquisition of BLM lands with better access and more opportunity to hunt, fish, hike, birdwatch, etc. by the general public might, in fact, increase the sales of recreational licenses and enhance the overall opportunity for the state to provide recreation to the general public. Enforcement would be slightly easier because the BLM lands generally will be within or near larger blocks of state land that are already being checked and because there will be no jurisdictional and enforcement ambiguities similar to those occurring on the Crow Reservation.

4.1.8 Cultural Resources

There will be no impact to cultural resources as a result of the exchange. The state would have the same obligation as the BLM had to survey, record, and protect, if necessary, any cultural resources threatened by a proposed land use change. The Bureau of Indian Affairs will have the same responsibility for lands that ultimately become part of the Tribal trust lands.

4.1.9 Access

BLM intends to secure and retain access to an easement along a stockwater pipeline on the Knowlton tract in section 11. Terrain might not allow vehicular access along the pipeline for the entire route, so BLM will secure such additional easements for the maintenance of this range improvement project as are deemed necessary. With these easements in place there will be no impact on this project.

As mentioned earlier in section 4.1.5.2 Noxious Weeds, the Knowlton tract includes an enclosure for bio-agents and data collection for leafy spurge studies. BLM will retain an easement for this experimental site and maintain access to the site to allow the BLM and ARS to continue their work and maintain their investments at this location.

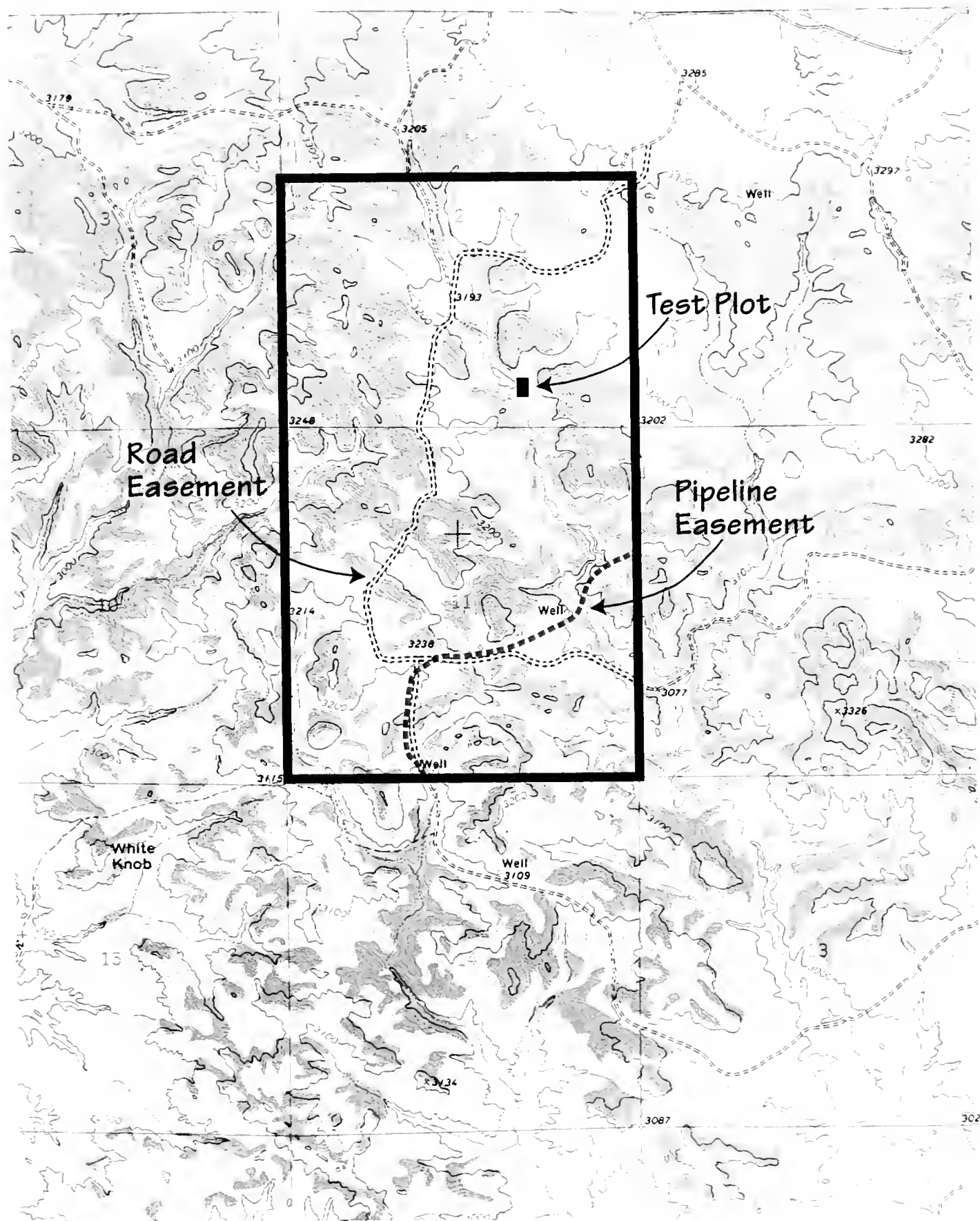
Transfer of this tract would include an access easement along the existing roads through the Knowlton tract to the other BLM allotments in the area. With this access easement, access would be essentially the same as under BLM management. Figure 4-1 shows the Knowlton tract and easements for the roads, pipeline and weed enclosure that are proposed to be retained by BLM.

There are generally no defined vehicle trails or tracks on the other BLM lands involved in the exchange, except the Hardscrabble Creek parcel and the 40-acre parcel on the Wells Coulee/Otis Creek tract, neither of which have public vehicular access. There is probably no need to secure access easements on the remaining BLM tracts.

Only one of the 15 state parcels on the Crow Reservation has legal public road access (Halfway House Coulee). Access to all of the other state parcels requires crossing private, Tribal trust lands or individual Tribal allotments. As these lands become Tribal trust lands through exchange, the Halfway House Coulee parcel will not be accessible to the public, except along the highway easement. Access will generally be restricted for non-Indians, except to the extent that the lessees or the public may now access the Halfway House Coulee and other state parcels with permission, by easement, or by other established use rights.

Other state lands have more primitive access routes (wheel tracks, bladed access roads, etc.) that presently cross the parcels and tracts and provide access to other

Figure 4-1 Easements retained by BLM on the Knowlton Tract



areas of the lessee's ranch operations or to adjacent owners or lessees. There is some potential that access previously enjoyed by a lessee on a state lease may be lost as a result of the exchange. If easements cannot be negotiated with the Crow tribe and this access is critical and must be maintained by some other means, there is the possibility of additional primitive road development on adjacent lands to provide this access.

4.1.10 Socioeconomics

4.1.10.1 Grazing

The impact of the exchange would be to convert BLM grazing leases to DNRC grazing leases on the former

BLM tracts. Since the state will recognize any existing BLM lessee as the current lessee, entitled to a preference right under state grazing rules, there will not be any displacement of BLM lessees as a result of the exchange at least until such a time as the initial lease expires. When that occurs, and the tract comes up for competitive bid, the lessee would have to match any other bids in order to maintain his preference and authorization to use the state land. The state does have a higher AUM rate than the BLM (currently \$4.01/AUM for the state compared to the current \$1.35/AUM for the BLM) and this means that the cost of the lease will be higher under state ownership. Table 4-1 provides an overview of potential revenues from the BLM lands under state ownership for grazing and other sources.

Table 4-1 Potential State Revenues from BLM Lands Proposed for Exchange in Southeastern Montana

Table 4-1 Potential State Revenues from BLM Lands Proposed for Exchange in Southeastern Montana						
Tract/Acres	Cropland ³⁵	Grazing ³⁶	Timber		Revenue Total	
			Net Present Value ³⁷	Annual Value ³⁸	Total Annually	\$/Acre/Year
Knowlton Tract 1120 Acres	N/A	\$1,082.70	\$205,458.00	\$8,280.00	\$9,362.00	\$8.36
Hardscrabble Creek 320 Acres	\$1,673.75	\$252.63	N/A	N/A	\$1,096.33	\$5.96
Wells Coulee/Otis Creek 126.61 Acres	N/A	\$144.36	N/A	N/A	\$144.36	\$1.14
Morgan Creek 80 Acres	N/A	\$68.17	N/A	N/A	\$68.17	\$0.85
North Smith Creek 480 Acres	N/A	\$445.11	N/A	N/A	\$445.11	\$0.93
South Smith Creek 962.48 Acres	N/A	\$1,166.91	N/A	N/A	\$1,166.91	\$1.21
Webster 320 Acres	N/A	\$280.70	N/A	N/A	\$280.70	\$0.88
Little Beaver Creek 320 Acres	N/A	\$328.82	N/A	N/A	\$328.82	\$1.03
TOTALS	\$1,673.75	\$3,749.35	\$205,458.00	\$8,280.00	\$13,707.10	Avg. = \$3.67

³⁵ The Hardscrabble Creek parcel has both grazing land and 132 acres of cropland. It is assumed in this analysis that cultivation of these acres would continue under a State lease and that the remainder would continue to support a grazing lease.

³⁶ Grazing revenue estimate is based on BLM AUM stocking rates multiplied by the \$4.01 minimum rate/AUM for 1998 State grazing leases. DNRC stocking rates may be slightly different and the minimum rate may not apply if the existing BLM lessee does not take the state lease and it is competitively bid.

³⁷ Net Present Value analysis was done by Will Wood, DNRC forest economist. The analysis assumes four entries at 40-year intervals, with each entry harvesting 50 percent of the standing volume. An average growth rate of 2.5 percent is assumed and future revenue is discounted to the present using a 4 percent real rate. The analysis also assumes initial entry into the Knowlton tract in 5 years. Volumes and stumpage values are based on timber cruises by BLM in 1997.

³⁸ Annual value of the timber represents the income necessary to equal the net present value and thus represents the theoretical annual benefit from the timber. It is not an annual income figure, but more of an average yearly income over a longer period of time where infrequent, large incomes from timber sales are averaged with years of no income.

The revenue from grazing on the BLM parcels is based on applying the DNRC minimum grazing rate to the AUM stocking rate used by the BLM in its current lease arrangements. Because DNRC and BLM use different criteria for determining carrying capacity, the number of AUM's could change slightly after the exchange. Thus, the monetary value of the grazing should only be considered an estimate. Grazing could potentially increase for some period following timber harvest on the timbered portions of the Knowlton tract, but for purposes of this environmental assessment, it is assumed that stocking levels would remain at pre-harvest levels to avoid damaging regeneration growth following harvest.

The state would receive \$8,676.59 in 1998 for the grazing leases on state lands involved in this exchange (Table 3-12). Although these lands are designated common school trust lands, the revenues from grazing and other annually collected lease payments do not flow to the trust, but to the general fund, where they are distributed to the school equalization account. The state will be required to receive at least an equivalent amount of benefit annually from lands it acquires from the BLM to proceed with the exchange under the Land Board Exchange Policy, which incorporates constitutional and statutory restrictions on exchanges. Thus, continuation of the agricultural cropland revenue from the Hardscrabble Creek parcel and the future harvest of some of the timber on the Knowlton tract would have to occur in order to justify the proposed exchange.

The minimum lease rate is established by a formula influenced by the price of cattle in the state. In addition, depending on when the lease was begun, there are two different minimum rates. Six of the 15 state parcels lease at the minimum rate for leases issued before July 1, 1993 (\$3.58/AUM). Five parcels lease at the minimum for leases issued after 1993 (\$4.01/AUM). These minimum rates are about three times higher than the BLM lease rate, but are only 1/3 (or less) of the rate charged by the Tribe. Two tracts have rates established by competitive bid (\$11.00/AUM and \$6.01/AUM) which are more comparable to both private and tribal lease rates on the reservation. The Tribe charges by the acre instead of by AUM's (animal unit months) and those charges range from a minimum of \$2.00 up to \$5.00 per acre for grazing. The lands typically require about 4 acres per AUM, so the Tribal rate may be as high as \$8.00 to \$20.00 an AUM. Since

many private grazing lands also lease within this price range, the market rate on the reservation appears to be considerably higher than the state rate. Exchanging these lands will eventually convert the state lands to Tribal trust lands and this will have two impacts on existing lessees. It will affect the existing preference right granted to the state lessee and it will increase the lease rate.

Leases on Tribal trust lands are granted only to Tribal members, unless there is no interest expressed by any members. If that occurs, then non-Indians may compete for the lease. Leases generally run for 5 years and no preference right is given the current lessee. The preference right granted to current state lessees allows them to meet a higher competitive bid at the end of their lease term and thus retain the lease interest on a continuing basis. This allows the lessee to plan his operations, including the state lease, with a reasonable expectation of stability over time and allows the lessee to borrow money to operate or make improvements based on the holding of the state lease. The exchange may exclude the present lessee if a Tribal member acquires the lease. If the current lessee retains the lease, it will be without a preference right, and thus will not allow long range planning based on the expectation of continuing the lease.

Lease rates for tribal trust lands are different for tribal members than for non-Indians. Often, since non-Indians are excluded from the initial bidding, the lease goes to a tribal member at a rate not much different from the State rate. In many cases, that tribal lessee will sub-lease the parcel to a non-Indian at a rate that approaches the market rate as a profitable business venture. Thus, the current State lessee may have an opportunity to lease the parcel if there are no tribal bidders or through a sub-lease arrangement, but at a cost two to five times higher than the state lease rate. The degree to which this cost differential may impact current lessees depends on the extent to which the state leases are important to the total grazing operation. Where the operation is small and the state lease is a significant percentage, the financial impact may be proportionally greater than when the state lease(s) represent a small percentage of the total grazing operation.

Although the financial impact may be an imposition to the current lessee, it is apparent that state lease rates on the reservation are generally below the rate for

private grazing. Thus, the impact can also be viewed as a removal of a benefit which is not available to those without state leases, and a transfer of that benefit (because of the Tribe's differential between Indian and non-Indian lease rates) to a successful Indian bidder. From the viewpoint of the successful bidder and the Crow Tribe this would be seen as a beneficial impact of the exchange.

Finally, an impact associated with the loss of preference and potential loss of grazing privileges is the question of dealing with this change in an area of "open range." A change of lessee has impacts beyond the loss of grazing or the increased price of grazing because it raises the question of the cost and burden of fencing and the economic consequences of not fencing. Most current lessees have developed a vested interest not only in the state lease but in the lands surrounding the state parcel. They try to have exclusive use of the range for a period of time so as to avoid intermixing cattle from other herds. This is partly because of the extra work involved in separating herds, but more importantly, it allows serious ranchers to maintain a breeding program that allows herd improvement over time and produces calves that can bring a better price. Loss of preference on a small parcel of land in a pasture otherwise controlled by a single grazing operation can have serious impact on the ability to exclusively use a pasture. The impact is even more serious if the lessee has developed water on the state parcel for use in the larger pasture. Fencing is generally seen as a poor solution because of the limited distribution of water and the inability to enforce gate closures. It is important to note that most state lessees also have additional leases or subleases from the Crow Tribe or individual tribal members. Thus, state lessees have had to deal with and accommodate these impacts under presently existing conditions.

Tribal Resolution 75-22 places the duty, burden and cost of fencing on the non-Indian, if a fence is required to separate exclusive grazing use.³⁹ The same resolution then grants co-ownership of the fence to both the Indian and the non-Indian. In some cases, this greatly compounds the impact to the current lessees, who not only lose the use of the state parcel, but must bear the entire cost of a fence in which they have only partial ownership, making it difficult to prosecute damage claims over cut wires, gates left open, etc.

4.1.10.2 Timber

Revenue from timber sales on common school lands, since 1992, has gone directly into the school equalization account and is generally spent in the year it is earned (See Figure 3-1). Table 4-1 shows what the projected annual value of the timber could be from each of the BLM parcels with timber. This annual value is essentially the amount of money that would have to be invested annually to equal the net present value of the timber, under the assumptions listed in the footnotes. Although this is not an annual income that can be compared directly to the income from grazing, the timber annual value provides an average value resulting from infrequent, but relatively large, timber revenues with intervening years of no income from timber. When combined with grazing and other potential revenues, it can be seen that over the long-term, the revenue from these lands will exceed the grazing revenue from the state lands on the reservation.

The final column in Table 4-1 and in Table 3-12, presented earlier, shows the relative value of the lands in terms of the amount of revenue produced per acre, per year. The state lands on the reservation average \$1.22/acre/year, while the BLM lands that would be acquired average \$3.67/acre/year.

There is no merchantable timber on the state lands on the Crow Reservation, so no revenue would be generated by timber sales from these lands either before or after an exchange.

4.1.11 Hydrologic and Soil Resources

Some soil disturbance and hydrologic impact will be associated with any roads built to gain access to other state lands or to harvest timber. Timber harvest will create changes in the hydrologic regime by generally increasing the amount of precipitation that reaches the ground surface and the rate of spring snow melt and decreasing the evapotranspiration within the harvested area. These changes occur rapidly following harvest, but are dynamically changing as regrowth occurs and are difficult to predict. These impacts may or may not be significant and would have to be addressed in a separate environmental assessment if timber harvest were to subsequently occur.

³⁹ Tribal Resolution 75-22 has not been tested in court involving the Crow Tribe's attempt to enforce this ordinance. A recent Bureau of Indian Affairs attempt to enforce the resolution was overturned on appeal by the Indian Board of Appeals.

Soils could become prone to excessive erosion if overgrazing were to occur as a result of the exchange. However, the state does not routinely allow overgrazing and degradation of the grazing or soil resource. On state lands on the Crow Reservation, there does not appear to be any significant difference in grazing practices or stocking levels between present state and tribal leases and overgrazing leading to soil erosion is not anticipated. This is also true when comparing BLM lands with adjacent state parcels, even though each agency uses a different methodology to arrive at stocking levels.

4.2 Impact of No Action

The No Action alternative assumes that the proposed exchange of lands is not approved and does not take place. It basically maintains the status quo with regard to land ownership, management policy, and revenues. It does have some consequences because the BLM will remain under statutory obligation to provide private land exchanges to make up for state land exchanges that do not occur. The BLM still would be required to complete an environmental assessment for impacts associated with private exchanges. The biggest impact of no action is that lands now in BLM ownership would be converted to private ownership. If the lands BLM selects to exchange had public access, this could result in a decrease of accessible public lands in Montana. At the same time, this action may not affect the public's ability to reach public land, if land selected by BLM currently has no access. The BLM private exchange program would place additional private lands on the tax rolls in counties where these exchanges occur and private individuals would enjoy the benefits of private ownership, although private ownership may be more costly for uses, such as grazing and weed treatment, than a BLM lease. Private lands on the Crow Reservation would become tribal trust lands and would decrease the taxable base of Bighorn and Yellowstone counties.

4.2.1 General Geography, Topography and Aesthetics

No impacts are anticipated to the geography, topography or aesthetics of the BLM or state lands under the No Action alternative. It is unlikely that BLM will initiate timber sales on any of the isolated BLM lands involved if they remain under BLM ownership, so

visual impacts associated with timber sales or roads will not occur.

4.2.2 Climate

Climate will neither affect or be affected by the No Action alternative.

4.2.3 Groundwater, Geology and Mineral Potential

The No Action alternative would have no effect on groundwater or geology. BLM would maintain both surface and sub-surface estates for the lands it presently holds. The state would continue to hold only the surface estate for the Crow Reservation state lands.

4.2.4 Surface Water Rights

There would be no effect on the BLM lands. Current State lessees that enjoy water developments on the state parcels would continue to have the use of those water developments for stock water use.

4.2.5 Vegetation

If the Knowlton tract remains under the current BLM management, BLM will continue to implement timber management to reduce hazardous fuels and the risk of wildfire while maintaining the abundance of wildlife habitat. With the passage of the Big Dry Resource Management Plan in April of 1996, the Knowlton area could be managed as a "conditional fire suppression" area. Under this description, the intensity of wildfire suppression is not predetermined and will vary with conditions. Some managed wildfire could now be allowed in the Knowlton area. Prescribed fire planning has begun in the area. Stand thinnings may also be an option to reduce fire risk. Sales of posts and poles, Christmas trees and firewood are allowed in designated areas. Sawtimber sales are currently allowed on ponderosa pine affected by insects, fire or other natural causes. Commercial timber harvests are currently not allowed and would require an amendment to the Resource Management Plan.

4.2.5.1 Rare Plants

There would be no impacts to rare plants under the No Action alternative, unless the BLM private exchange program involves lands with rare plants.

4.2.5.2 Noxious Weeds

No Action would result in the BLM and state continuing to be responsible for weed identification and control on the lands each agency presently administers.

4.2.6 Wildlife Habitat and Fisheries

Wildlife habitat generally would be unaffected and unchanged from present conditions by the No Action alternative. However, some wildlife habitat now on public lands would come under private ownership. Stewardship methods and results may change as a result of land ownership transfers. For example, native range or homesteaded lands that have reverted to native range under BLM ownership may be converted to cropland under private ownership, with resultant impacts to species dependent on native range. These actions would be evaluated by BLM personnel in a private exchange program environmental assessment.

4.2.6.1 Threatened and Endangered Species

There would be no impact to any Threatened or Endangered species under the No Action alternative, unless subsequent private exchanges by BLM involve lands that are inhabited by such critical species.

4.2.7 Recreation

BLM lands would continue to have recreational use similar to that which currently exists, except to the extent that such lands are involved in private exchanges, which might limit or remove the opportunity for public recreation. State lands would continue to be under used because of lack of access and restrictions prohibiting big game hunting by non-Indians on the Crow Reservation.

4.2.8 Cultural Resources

The Crow Tribe anticipates that there are a great number of sites on state lands within the reservation that have cultural, social, and religious significance to the Crow Tribe. Ownership of these lands by the United States, in trust for the Crow Tribe, will eventually allow the Tribe to discover and enjoy the benefits of these resources. State ownership would deny or delay these benefits. Under the No Action alternative, both BLM and the state would continue to have responsibility over protection of cultural resources on their lands. BLM would have to perform cultural

clearances for lands involved in the private exchange program.

4.2.9 Access

Access would not change under the No Action alternative. BLM parcels would continue to be administered under BLM's access policy, except that lands in the private exchange program would have future access determined by the private landowner that acquires the BLM lands. With few exceptions, state lands on the Crow reservation would continue to be legally inaccessible to the general public.

4.2.10 Socioeconomics

4.2.10.1 Timber and Grazing Revenue

It is unlikely any timber harvest would be done under current management direction on any of the BLM or state parcels. Grazing revenues for the state and BLM will continue from existing lessees. Existing State grazing lessees will continue to have preference and will continue to utilize water developments on the State parcels.

The Crow Tribe will not acquire the state parcels and tribal members would not have the opportunity to compete for state leases until current lease terms expire. Even then, the preference right holder would have the opportunity to meet the high bid and retain the grazing lease. Only tribal members who currently hold state leases would benefit.

BLM would have to actively work with the Crow Tribe through the private exchange program to find private landowners willing to acquire or exchange for BLM lands off the reservation to meet the mandate of the Crow Boundary Settlement Act. The Act requires BLM to provide land to the Crow Tribe equivalent in value to the originally selected state land on the reservation (approximately 46,000 acres). Because there are intrinsic values to private land ownership that are not quantifiable, it is not practical to try to determine if the fair market value paid by a private party to acquire BLM lands is more cost effective than simply continuing with a BLM lease, which is invariably less expensive. However, if the land were subleased for grazing after being acquired by a private individual, private leasing rates are as high as ten times the BLM grazing lease rate.

4.2.10.2 Payment in Lieu of Taxes

Under the No Action alternative, the state would continue to receive PILT as it has in the past.

4.2.11 Hydrologic and Soil Resources

There is no foreseeable change in the Hydrologic and Soil resources under the No Action alternative, except for lands, yet unidentified, that might be involved in private exchanges which might subsequently be broken for cropland. This could have the potential to increase wind and water erosion and increase stream sedimentation, should it occur. Such impacts would be evaluated by BLM in a separate private exchange program environmental assessment.

4.3 Impact of the Mitigated Exchange Alternative

This alternative is referred to in the text as the Mitigated Exchange alternative and it evaluates various actions that might be taken by the Land Board to mitigate or reduce specific impacts on ranching operations for current state lessees. Key words that are highlighted in bold text in this paragraph will be used to differentiate these mitigation options. These include the possible consideration of **delayed implementation** until the end of the current lease term to allow more time for a lessee to adjust operations; **granting access easements** to lessees before the exchange to ensure future access to other lands; making exchanges contingent on an equitable **cost sharing** between parties if the exchange requires fencing (tribal resolution requires the non-Indian to fence to keep livestock from trespass on a tribal lease). Another mitigated exchange that could be suggested and evaluated, but not enforced without Crow tribal concurrence, would be the granting of **continued lessee preference** for a transitional period of time. The lessee would have to pay more for the grazing lease, but would have some additional time to resolve problems that loss of the lease would cause. Finally, **three-party private exchanges**⁴² could be considered in conjunction with exchanges between the BLM and the state. In cases where loss of a particular state lease could irreparably

harm a ranching operation, the state could consider exchanging fee (privately owned) lands of equal value for state lands and simultaneously exchanging the lands acquired by the state to the BLM to fulfill the requirements of the Crow Boundary Settlement Act. Concurrence by the Crow Tribe would be necessary for such exchanges, since any state land ultimately acquired from a private party would become tribal trust land.

In the Phase II exchange, the Crow Tribe has not identified any state lands it deems suitable for three-party private exchange. Therefore the impacts of such exchanges are not specifically discussed in this alternative.

There is no need to evaluate mitigation options for the BLM lands because loss of lessee preference and potential loss of access would not occur upon completion of the exchange and cost sharing for fencing is the normal procedure, rather than the exception off the Reservation.

If delayed implementation is used as a mitigation on the state lands, it also would delay implementation on the BLM lands, even though lessees have already been given a required two-year notification for cancellation of their BLM leases.

4.3.1 General Geography, Topography and Aesthetics

The Mitigated Exchange alternative would have the same effect as the proposed action, which is basically no effect except for potential viewshed changes if timber harvesting and additional roading occur after the exchange. Delayed implementation would delay the onset of this impact.

4.3.2 Climate

The Mitigated Exchange alternative would have no effect on climate.

4.3.3 Groundwater, Geology and Mineral Potential

Impacts would be the same under the Mitigated Exchange alternative as would occur under the Proposed Action.

⁴² In this context, private exchanges are voluntary exchanges between the state and private individuals and this mitigation option is not part of the private exchange program between BLM and private individuals mandated by the CBSA.

4.3.4 Surface Water Rights

Delayed implementation or continued lessee preference would allow more time for lessees to develop alternative water supplies (new stock water ponds, wells and distribution tanks, hauled water dispensing tanks, etc.) where they may be losing access and rights to use of water developed on state lands. Tribal lessees may also need to develop water on state sections that are presently without water before they are useable as grazing tracts, if they become separately fenced.

4.3.5 Vegetation

The Mitigated Exchange alternative would have no impact on vegetation, except that delayed implementation or continued lessee preference would maintain the current operator and grazing practices, thus likely maintaining the status quo in terms of range condition and productivity.

4.3.5.1 Rare Plants

It is unknown if the Mitigated Exchange alternative would have an impact on rare plants.

4.3.5.2 Noxious Weeds

Any new roads, wheel tracks, or other vehicular access routes required to implement either the Proposed Action or the Mitigated Exchange alternatives, would become potential invasion routes for noxious weeds that tend to spread along travel routes or areas of disturbance (spotted knapweed, Canada thistle, etc.).

4.3.6 Wildlife Habitat and Fisheries

The Mitigated Exchange alternative would have the same impact on wildlife and fisheries as the proposed action. Delayed implementation might delay the timing of initial and future entries for timber harvest on the Knowlton tract, thus maintaining habitat in essentially its present condition for a longer period of time.

4.3.6.1 Threatened and Endangered Species

Like the other alternatives, the Mitigated Exchange alternative would have no impact on threatened or endangered species.

4.3.7 Recreation

The Mitigated Exchange alternative would have the same impact as the Proposed Action on recreation. Delayed implementation would forestall the exchange and potentially diminish the sales of recreational use permits that might be sold to recreationists currently using BLM lands involved in the exchange.

4.3.8 Cultural Resources

Cultural resources would not be impacted under the Mitigated Exchange alternative. The same Memorandum of Understanding (MOU) for Cultural Resources would be in effect under the Mitigated Exchange alternative as under the Proposed Action. Delayed implementation might lengthen the time for cultural resource assessment of state lands within the Crow reservation by the Crow tribe.

4.3.9 Access

Access easements, if granted to lessees prior to the exchange, would allow them access across former state lands to maintain ranch operations that were dependent on that access. This would be a benefit to the lessee, particularly if the lessee could not be guaranteed such access under tribal ownership. The state would also benefit, to the degree that the State recovers sufficient monetary return from the easements to compensate for any value diminished in the appraisal as a result of granting such easements.

The state does not normally process access easement applications unless it can be shown that legal access is already available up to the point of entry to a state lease parcel, or that access existed as a right-of-way or easement when the parcel was acquired by the state.

The Crow Tribe has already indicated that it opposes granting such easements because it places an encumbrance on the land they would receive and, more importantly, because it would not allow the Tribe to capture the monetary benefit, even if it is in agreement with granting access.

4.3.10 Socioeconomics

Most of the impact discussion under the Mitigated Exchange alternative is concentrated in this section, since, ultimately, most of the impact of the exchange is socioeconomic in nature.

4.3.10.1 Delayed Implementation

Delayed implementation of the exchange would allow the *status quo* to continue for some indefinite period to grant lessees additional time to make individual adjustments in their operations to compensate for the loss of the state leases. These adjustments may include changing the configuration of pastures to eliminate dependence on a state parcel, development of replacement stock water, negotiating for the sale or lease of replacement pasture, herd reduction to adjust to the future resource base, or even selling and reestablishing operations elsewhere. While these adjustments would probably cost the lessee money, the impact can be mitigated if the costs are spread over a longer time. Delayed implementation would grant the benefit of this additional time, and the benefit is primarily to the State lessee, although federal lessees also would be subject to lower lease rates for a longer time.

The state, by virtue of the Land Board exchange criteria, has to benefit, or at least not be harmed, in order for the exchange to be approved. Assuming that the state would benefit in the exchange, then delayed implementation would delay the state beginning to receive any enhanced benefits that would be gained by the exchange and may run the risk of diminishing those benefits if delay results in increases in land values on BLM lands faster than values increase on the Crow reservation. The state might benefit in the exchange if Crow reservation lands increase in value faster. In either case, both the state and BLM have greater administrative costs if the exchanges are delayed.

The exchange is being done primarily for the benefit of the Crow Tribe, and the Tribe would also not be able to begin benefiting immediately from the exchange if it were delayed. To the extent that the state also would benefit from the exchange, those benefits would be foregone for the duration of any delayed implementation.

4.3.10.2 Access Easements

The effect of access easements as a way of mitigating impacts to current state lessees is described under Section 4.3.9. Access. This might be useful where state parcels separate deeded lands owned by the lessee, but none of the lessees involved in this exchange have expressed interest in this option. This may be because relatively few of the existing access roads and trails directly connect state land with deeded parcels and

almost all access ultimately depends on a combination of access across tribal, allottee, and/or deeded lands. This can result in difficulty showing legal access up to the point of entry of the state section and in meeting the requirement that this be demonstrated before an easement application can be processed by the state.

4.3.10.3 Cost Sharing

The Socioeconomics impact section of the Proposed Action (4.1.10) points out that, under the exchange, lessees would not only lose their lease, but would be required by Tribal Resolution 75-22 to bear all costs of fencing, if fencing were the only way to realistically separate the parcel. The cost sharing mitigative measure would take the stance that, if fencing is required, it would benefit both parties, and in fairness to all, both parties should share equally in the cost of the fencing. Under this measure the exchange would be contingent upon an agreement that Tribal Resolution 75-22 would have no force or effect over lands acquired under this exchange.

4.3.10.4 Continued Lessee Preference

Continued Lessee Preference is a variation of delayed implementation. Basically it would allow the exchanges to go forward, avoiding delaying any benefit to the State or the Crow Tribe, but it would allow, with the Tribe's assent, continued lessee preference until the end of the current lease term. This means that the lessee would have to pay the higher tribal lease rate, but would have the same additional time that delayed implementation would give, to plan and implement adjustments to current operations (changing the configuration of pastures to eliminate dependence on a state parcel, development of replacement stock water, negotiating for the sale or lease of replacement pasture, herd reduction to adjust to the future resource base, selling and reestablishing operations elsewhere, or other measures).

Even though the Tribe would begin getting the higher lease rate immediately under the Continued Lessee Preference, some important benefits to the Tribe would be foregone. The reason is that at least part of the benefit to the Tribe would go to individual tribal members who would have the opportunity to compete for the tribal lease, where they may have been effectively precluded from doing so under the preference granted the state lessee. Since the Tribe leases to members at a lesser rate than to non-Indians, it is assumed the Tribe has as much interest in the benefit

to individual members as it does in the collective monetary benefit to the Tribe in the acquisition of these lands.

Allowing the exchange to go forward would have the same benefit to the state as the proposed action, in that it would allow the state to capture the benefit of the exchange immediately and would avoid the erosion of this benefit by any differential escalation of land values.

4.3.10.5 Private Exchanges

Three-party private exchanges between the state, the current state lessee, and the BLM would be proposed only when a parcel critical to a ranch operation would be lost through a CBSA exchange. There would be a benefit to the present lessee, in that the private exchange would ensure continued viable ranch operation, even though equivalent value land would still be given up at a less critical location on the ranch. The Crow Tribe would still receive the same benefit of State land being converted to Tribal trust land. However, such exchanges require Crow Tribal approval. No lands in the Phase II exchanges were deemed suitable for three-party private exchanges.

4.3.11 Hydrologic and Soil Resources

The Mitigated Exchange alternative would have the same impacts as the Proposed Action alternative.

4.4 *Comparison of Alternatives*

Table 4-2 compares the alternatives by examining the various impacts for:

1. Board of Land Commissioners' seven criteria for land exchanges,
2. Impacts for various significant resource issues described in Chapter 3, Affected Environment.

Table 4-2 Alternative Comparison and Impact Summary

<p>Table 4-2 Alternative Comparison and Impact Summary</p>			
Issue	Proposed Action	No Action	Mitigated Exchange
Board of Land Commissioners Criteria			
1. Equal or greater value	The state would exchange 15 tracts worth \$1,038,410 for as many BLM tracts as it takes to equal that value. The eight BLM tracts are worth \$760,028, which, when combined with lands from the first exchange with a residual value of \$260,738, is approximately the same value. Small differences in value are expected to be reconciled in subsequent exchanges.	Under the No Action alternative, there would be no exchange.	Delayed implementation has potential to diminish the acreage received by the state because the residual lands from Phase I in the Beaverhead, which are needed to equalize values for this exchange, are appreciating faster than those on the Crow Reservation.
2. State land bordering on navigable lakes and streams	None of the state tracts border or are crossed by any navigable or other significant perennial streams. The Grapevine Creek tract has a small perennial stream with no access or fishery.	Under the No Action alternative, there would be no exchange	Same as Proposed Action
3. Equal or greater income to the trust	State tracts would produce \$8,677 in 1998 from grazing. BLM lands acquired in the exchange have the potential to produce \$13,703 per year from grazing, dryland crops and timber.	Under the No Action alternative, there would be no exchange and the present revenue stream would continue if the state tracts remain leased.	Delayed implementation would defer increased benefits to the state. Access easements may allow the capture of some additional value before the exchange. Continued lessee preference would provide the same benefit as the proposed action.
4. Equal or greater acreage	Because the BLM is constrained to exchange on the basis of equal appraised value, the state would receive fewer acres of BLM land, but the land acquired would be more valuable land, as determined by appraisal. The state would be exchanging 7109.4 acres for 3729.09 acres of BLM land in southeastern Montana and an additional 440 acres from the Phase I exchange.	State acreage would remain the same because the exchange would not occur.	Same as the proposed action.
5. Consolidation of state lands	Most of the BLM tracts would increase the acreage of larger, already consolidated state tracts. Obtaining the Knowlton tract create a group of state land in the area, but the lands would not be contiguous	State tracts would remain in their present configuration.	Same as the proposed action.

Table 4-2
Alternative Comparison and Impact Summary

Issue	Proposed Action	No Action	Mitigated Exchange
6. Potential for long term appreciation	Some of the BLM tracts may be appreciating faster than the lands on the Crow Reservation. Generally, most BLM and state lands used exclusively for grazing are similar in value and are assumed to be appreciating at the same rate.	Under the No Action alternative, there would be no exchange	Delayed implementation may lessen the acres ultimately exchanged to the state if there is a significant appreciation differential on BLM lands.
7. Access	The state tracts are generally not accessible to the public. This exchange would increase the amount of accessible acres of state lands generally, but would not increase access to public lands, because the public's access to the BLM lands acquired would remain the same as before the exchange, with the exception that off-road vehicular travel (if any was occurring) would be prohibited.	Since no exchange would occur, access would remain as at present with the state tracts remaining inaccessible to the public (with one exception). BLM tracts would remain under BLM's access and travel policies.	Same as the Proposed Action.
Public and Agency Issues by Resource Topic			
1. Grazing Costs	BLM presently leases grazing for \$1.35/AUM; the state minimum rate is \$4.01/AUM; and the Crow rate ranges over about \$8.00- \$20.00/AUM. As BLM lands transfer to the state, former BLM lessees would pay a higher state rate. Former state lessees, if they are able to maintain their leases would be required to pay the higher tribal lease rate.	With No Action, the exchange as proposed would not occur and leases would remain under their present jurisdiction, and presumably at present rates.	Delayed implementation would maintain the present lessees and lease rates, perhaps until present leases expire, then would be the same as the Proposed Action. Continued Lessee Preference would allow state lessees on the Crow Reservation to maintain their leases until they run out, but would begin paying immediately at the higher cost tribal lease rate.
2. Preference Rights	The state would recognize by mutual agreement the BLM lessee as the lessee of record entitled to a state preference right at the end of the lease term. The Crow Tribe, upon converting state lands to tribal trust lands, would grant a preference to tribal bidders, so non-Indian state lease holders would lose their preference right when the exchange occurs.	No Action would maintain the status quo with regard to preference rights.	Delayed implementation would be like No Action (status quo) until the exchange actually occurs, then it would be the same as the proposed action. Continued Lessee Preference would also maintain the present state lessee on former state tracts, until the present lease runs out. At that time the tribal preference for tribal member bidders would be in effect.
3. Payment in Lieu of Taxes (PILT)	BLM is required to continue to make PILT payments on former BLM lands exchanged to the state as long as the state retains ownership of the exchanged lands.	Same as the Proposed Action	Same as the Proposed Action

Table 4-2
Alternative Comparison and Impact Summary

Issue	Proposed Action	No Action	Mitigated Exchange
4. Public Access	Unless petitioned and authorized for closure, public access to the BLM lands would remain the same after they are transferred to the state, with the exception that a recreational use permit would be required for recreational pursuits that had no additional cost under BLM management. Only one state parcel had legal public access via Highway 313 abutting the parcel. There would be no legal public access to areas other than the highway right-of-way following the exchange.	Public access on BLM lands would maintain the status quo under BLM management. State lands would continue to have no legal public access, except for the Halfway House Coulee tract adjacent to Highway 313.	Same as the Proposed Action, except perhaps delayed under the delayed implementation option.
5. Lessee Access	On BLM lands, current lessees would continue as the lessee of record for at least one lease period and would enjoy the same access that they had as BLM lessees. On state lands, there would be no continuing preference right. Under tribal administration, access to other operations dependent upon access through the former state lease may be lost to current lessees, or compensation for that access may be required by a new lessee or the Crow Tribe.	Access for lessees would continue as it currently exists.	The access easements option would allow lessees of state sections to secure access easements from the state that would remain in place after the exchange. Normally to process such an easement, the state would require a demonstration that the lessee had legal access to the state section and that the access requested is critical to maintaining ranch operations.
6. Fencing Costs	Because of the loss of lessee preference rights on state lands that would be exchanged, fencing may be required to separate future users, because the state parcels are generally part of a larger grazing unit with only a perimeter fence. Tribal Resolution 75-22 would require the non-Indian to bear fencing costs if separation of uses from an Indian lessee was deemed necessary.	Preference rights of current lessees would be maintained, lessening the need to separate grazing interests by fencing.	Under the Cost Sharing Option, any exchange that required the current lessee to fence out the former lease lands to alleviate otherwise unavoidable impacts, would be contingent upon an equitable sharing of fencing costs between the current and future lessee.

Table 4-2
Alternative Comparison and Impact Summary

Issue	Proposed Action	No Action	Mitigated Exchange
7. Reimbursement for Improvements	BLM lessees would continue to enjoy any improvements made to BLM lands involved in the exchange, as long as they retain status of being the state lessees on the parcels. State Law (77-2-206, MCA) requires that state lessees that would lose the use and enjoyment of improvements through an exchange must be compensated for authorized improvements before the exchange is completed.	No reimbursements necessary, since lessees would continue to enjoy the benefits of any improvements they have made.	Same as the Proposed Action.
8. Access to Water	Exchange of some of the state lands has the potential (especially if fencing occurs) to separate grazing pasture from traditional stock water sources. This may have effects both to former lessees and to new lessees. Loss of state parcels with developed water may result in larger grazing areas being unusable without access to that water. State parcels without water development may be unusable to a tribal lessee without access to water on adjacent lands.	The status quo would be maintained.	Same as the Proposed Action
9. Future Foresceable Actions	BLM currently does not actively market timber from its lands, but maintains them for public recreational use and other resource values such a wildlife habitat. The state would manage the acquired lands to produce the greatest reasonable return to the Trust. This would entail timber harvesting. These future actions would be subject to environmental review under MEPA.	BLM lands may continue to have no timber harvest. Prescribed or managed burning would increase in occurrence for hazard fuel reduction. Salvage logging may occur.	Same as the Proposed Action

Table 4-2
Alternative Comparison and Impact Summary

Issue	Proposed Action	No Action	Mitigated Exchange
10. Wildlife Habitat	Wildlife habitat would continue to be maintained after the exchange more or less like the present. However, the state would utilize selective, intermittent timber harvests rather than wildfire to maintain forest habitats. These harvests would have temporary impacts on wildlife security and travel routes and may displace wildlife during timber harvest activity. Roads, if left open after logging would continue to displace wildlife	There would be no change to present management of wildlife and habitat.	Same as Proposed Action.
11. Cultural Resources	BLM and the state have entered into a Programmatic Agreement with the approval of SHPO and the Advisory Council on Historic Preservation. This agreement would require to state to do a complete cultural survey to federal standards on lands acquired in the exchange if a land use change is proposed that would potentially threaten any cultural, historical, or paleontological resources.	Respective state and federal requirements would continue to apply to cultural resources as they have in the past.	Same as the Proposed Action.

5.0 CONSULTATION AND COORDINATION

This chapter summarizes state, federal and other agencies consulted in the preparation of this EA.

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US Department of the Interior, Bureau of Land Management
US Department of the Interior, Bureau of Indian Affairs
US Department of the Interior, Fish and Wildlife Service

5.2 State Agencies

Department of Fish, Wildlife and Parks
Department of Natural Resources and Conservation
State Historic Preservation Office

Montana State Library -Montana Natural Heritage Program

5.3 Tribal Government

Crow Tribe

5.4 Local Government

Big Horn County Commission

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Appendix A

Scoping Issues Summary

Following is a summary of scoping issues identified during public meetings in Hardin, Glendive, and Baker.

Hardin Meeting- Held at the Big Horn Co. Courthouse at 7:00 p.m. on April 22, 1997. Seventeen members of the public signed the attendance roster.

- George and Sandra Smith, representing the Spear O Ranch, provided a copy of a letter and a map concerning the state property in Sec. 16, T4S, R38E. The concern was with the potential loss of water developments in this section that provide water for a larger pasture unit and the potential loss of access through this parcel between southern and northern portions of the Spear O Ranch.
- Several Crow Tribal members, including Clara Nomee, Tribal Chairperson, indicated their desire for this process to proceed as quickly as possible to correct errors over 100 years old, but no specific scoping issues were identified.

Glendive Meeting- Held at the Glendive Public Library at 7:00 p.m. on April 23, 1997. Fourteen members of the public signed the attendance roster.

- Leon Thrans, Sidney, wanted to know if there would be a difference in AUM's allocated to the BLM tracts if they are exchanged to the state. The state and BLM figure carrying capacity differently and he had some concern that the number of AUM's might be significantly smaller under a state lease.
- Leon Thrans also raised the concern that while consolidation of state tracts may meet a management objective of the state, consolidation of tracts may create a large enough block of grazing land to invite in outside, corporate interests to competitively bid on the grazing and may force the small rancher that has traditionally used and managed these tracts out of business if those leases are lost.

- Ron and Janet Frame, Culbertson, were concerned about the AUM rate differential between the \$1.35/AUM charged by BLM and the \$3.70/AUM rate charged by the state.
- Delbert Schweigert, Baker, asked BLM to consider selling BLM lands to existing permittees and use the money to purchase lands within the reservation. It was explained that some variation of this would have to occur in any case, because the state does not own enough land within the reservation to satisfy 46,000+ acres stipulated in the Crow Boundary Settlement Act. However, to date no willing sellers have come forward on the Reservation to participate in the private exchange program.

Baker Meeting- Held at the Baker Senior Citizens Center at 7:00 p.m. on April 24, 1997. Thirty-four members of the public signed the attendance roster, although five had also attended the Glendive meeting the previous night. Because there were so many comments, it was often not possible to obtain the name of the person making the comment. Many of the comments were already sent to the state and BLM in letters from the Montana Association of State Grazing Districts and the Red Buttes Grazing District. Comments that are already noted in these letters are denoted with an *.

- A general concern was voiced by one participant on the impact to landowners that were previously outside the Crow Reservation and now have lands within the boundary and subject to jurisdictional issues raised by the Crow Tribe. (This comment was noted, but does not directly relate to the proposal for exchange of state and BLM lands being covered by this EA)
- In grazing districts, if one person loses lands and the ability to graze a certain number of AUM's all in the grazing district have to take a prorated portion of that loss, both in terms of reduced AUM's within the district and in terms of the assets represented if the lands are removed from the district.*
- Changing to a state lease takes lands that were formerly BLM lands out of the grazing district.*

- The Red Buttes Grazing District presently charges its members an additional fee above the \$1.35/AUM rate charged by the BLM. Will the district be able to continue to do this if the state lands become part of the district?
- Bob Irvine, Pres. of the Red Buttes Grazing District, read from a prepared statement a list of about 13 issues, many of which are duplicated by the letters already received. That list included the following:
 - Will the state consider the cost to the Red Butte Grazing District of these exchanges* and the cost of opposing the changes?
 - Why wasn't the Grazing District notified sooner?*
 - The proposed changes will transfer all but 12 AUM's for four grazing district members, and three of those four will lose all preference they now have on the BLM lands.
 - 821 AUM's of grazing preference (23 percent of grazing preference in the District) is being proposed for exchange.
 - The district is required by state law to reimburse members for that 23 percent loss at a cost of \$56,000 to the district. Since the district has little cash on hand, it will have to sell lands to raise the money for reimbursement.*
 - It will cost approximately \$2,000 more per year for state leases if the present differential between state and BLM rated is applied to 821 AUM's.
 - Competitive bidding for state leases has the effect of inflating the value of the leases.
 - A BLM lease is more valuable than a state lease as collateral when borrowing capital.*
 - The proposed transfer will block up state lands and increase the interest of outsiders and drive prices up.
 - Noxious weed control is required to be at the expense of a state lessee, but BLM handles it on BLM leases.
- Recreationists will be adversely affected by being required to purchase permits to use state lands if this exchange goes through.
- 9.8 percent of the state land in the reservation is being proposed for trade in the Red Buttes Grazing District. This is a disproportionate impact, since the Grazing District does not have anywhere near 9.8 percent of the BLM lands within Montana. (34,000 acres of state land on reservation, 3,000 acres of BLM land in Red Buttes Grazing District.)
- Will BLM or DNRC reimburse Red Buttes Grazing District for their costs to fight this proposal? (BLM indicated No.)
- Bill Almy, Baker, criticized the state's approach to selecting lands within a district. He felt that the impacts are better able to be absorbed by those not in grazing districts, because of the additional financial impact to other district members.
- Bill Loehding, Ekalaka, felt this approach was typical of government agencies. Our approach to this should involve the people. We should put something in the paper to see if there is anyone out there that wants to exchange a BLM lease for a state lease.
- One individual felt that we should be looking at higher valued land along waterways, rather than dry grazing land.
- Bill Almy thought the state should be looking at acquiring "L.U." lands (L.U. lands are abandoned homestead lands reacquired by the government; also known as Bankhead-Jones lands). He suggested that we look at the L.U. lands in Prairie County since they were previously homesteaded and would perhaps have some dryland crop potential. (It was pointed out by members of the audience that the lands selected in this proposal in the Red Buttes Grazing District are also L.U. lands. What was not pointed out is that the entire Prairie County is included in a state grazing district.)
- Dean Wang, Baker, felt the economic impact of taking 640 acres out of Fallon County is much greater than if it were selected in Yellowstone Co., Missoula Co., or near Kalispell. The impact is much greater to the main street economy of Fallon Co.

- Mike Griffith (did not sign attendance register), reiterated the potential impact to towns and businesses, including the multiplier effect of each dollar spent.
- Tom Sparks, Plevna, commented on the fact that this is a difficult place to make a living and that each of the members of the grazing district found they needed just a little more land than they had in order to make a living. The grazing district allows them to share in just a little more land without having to make a large individual investment. With the previous discussion about L.U. lands, he had a real concern that the state acquiring these lands would have a financial incentive to convert them out of grazing to cropland. This would make the grazing district lose two ways; first with the loss of the preference rights of BLM lands and second, if the lands were then taken out of grazing, making it uneconomical to have enough lands to allow all of the ranchers to continue raising cattle as a lifestyle. He felt that the BLM should visit with the lessees and see if any of them wanted to acquire these lands by outright purchase at their appraised value, rather than put them in a position where they stand to lose no matter what happens.
- Shelley MacKay Dean, Willard, indicated that she had traveled to Miles City in February to ask the District Manager (BLM) for a description of the lands involved and was told that she could not have a list. She indicated that the district has a Memorandum of Understanding with both the BLM and the state requiring notification and she felt the MOU's were violated because the district was never noticed (although individual members of the district were noticed). She also echoed Tom Spark's concern about potential conversion of L.U. lands to cropland, although she felt, knowing the lands involved, it would not be practical. (DNRC agreed that, generally, the lands involved in the exchange proposal would not be suitable as cropland and only make sense to leave as grazing lands.). Finally, Dean felt that the historical significance of having as many as four generations of the same families in this grazing district needed to be taken into account.*
- Alice MacKay, Willard, indicated for the record she was opposed to the exchange.
- Shelley MacKay Dean noted that the people need to know early if we are planning a meeting in the area, because the paper only comes out every two weeks. (Three weeks notice was deemed appropriate by Ms. Dean.)
- Melvin Wolenetz, Baker, indicated his opposition to the exchange.
- Larry Herzog, Representative Rick Hill's Office, asked DNRC and BLM to be sure to let the Congressional Offices know what is going on and requested a copy of the scoping meeting comments.
- Bruce Ketchum, Plevna, commented that exchanging BLM land for state land takes that land out of the district and weakens the districts influence over the BLM on the remaining lands.
- Delbert Schweigert, Baker, indicated this exchange will take him out of the grazing district and will hurt him individually as well as the district.
- Jason Campbell, MT Assoc. of State Grazing Districts, asked if this exchange would have any impact on access to any private lands.
- Clinton Ehret, Baker, felt this exchange will hurt the district and the community. A lot of money is sent to the state from oil and the county gets relatively little in return for the support of the schools. If this exchange drives ranchers and farmers out of business, then there will be a lot of equipment and services that will no longer be purchased and that will hurt the economy of the county and make everyone suffer.
- Don MacKay (did not sign attendance list) would "lose" 2 1/4 sections if this exchange went through. He wanted to know if the AUM's would stay the same under a state lease?
- Bruce Ketchum felt this is a potentially large economic impact on one person.
- Tom Sparks questioned how the state would look at the good stands of residual grasses presently existing on these lands because of conservative management by the district. His concern was that the state would raise the AUM's because of the good

range condition and reap the benefits of good management by the district.

- Terry Straub, Baker, reiterated that the costs will go up for the whole group if this exchange goes through.*
- Jason Campbell wanted to point out that BLM allows for deferral of the lease fee if the lessee decides to rest the range for a season, but DNRC still requires payment of the lease. He also felt that DNRC could potentially increase the fees if the lessee takes good care of the land.

Appendix B

Mineral Report

Submitted by the BLM

State Office

107th Meridian

Settlement- Phase II

Conveyance Lands

I. Conclusion and Recommendation

All of the subject lands proposed for conveyance to the State of Montana are prospectively valuable for the occurrence of oil, gas, coal, and mineral material (scoria) resources. Development potential for oil and gas ranges from moderate to high. There is no production on any of the tracts.

The Custer County tracts are the only ones with high development potential for coal resources. Those tracts are located within the Knowlton coal field and contain coal of minable thickness. Coal rights in section 2 are owned by the United States, while coal rights in section 11 are under private ownership. The federal coal in section 2 is not likely to be developed within the foreseeable future. Transfer of surface ownership of that tract to the State of Montana would not likely result in surface owner non-consent which would

preclude future federal coal leasing. Transfer of the surface rights in section 11 would have no effect on federal coal leasing.

Mineral materials resources, in the form of scoria, are abundant throughout the region and have the potential for occurrence on the tracts. There are no known pits or permits on any of the subject tracts and development potential is unknown.

There are no geologic or mineral-related reasons which would preclude the conveyance of surface rights of the subject lands out of federal ownership. The proposed conveyance would not interfere with operations under the Mineral Leasing Act.

II. Introduction

This is a geology mineral potential report of Public lands to be potentially offered to the State of Montana as part of Phase II of the 107th Meridian Settlement. This conveyance of lands out of Federal ownership involves surface estates only; the mineral rights will be retained by the United States. This report is based on a search of available published and unpublished data. A field examination was not conducted.

III. Lands Involved

The Public lands which will be offered to the State of Montana are located within the BLM Big Dry Resource Area in Custer, Richland, Fallon, Dawson, and Wibaux Counties (See General Location Map). The tracts range in size from 40 acres to 640 acres. The total acres considered in this part of the Settlement are 3,729.09. All of the tracts are adjacent to lands with surface administered by the State of Montana.

IV. Status and Record Data

The potential conveyance tracts are all public domain. Their legal descriptions are as follows:

	<u>Acres</u>	<u>US-owned Minerals</u>
<u>Custer County</u>		
T. 6 N., R. 53 E., Sec. 2, lots 9-12, S2	480	All
Sec. 11, all	640	None
<u>Richland County</u>		
T. 25 N., R. 56 E., Sec. 15, E2	320	All
T. 26 N., R. 57 E., Sec. 23, SWNW	40	All
Sec. 26, lot 7, NWSW	86.61	All
T. 19 N., R. 59 E., Sec. 24, NWNW, W2SW, SESW	160	All
Sec. 26, N2NE, W2NW, SW	320	All
<u>Fallon County</u>		
T. 3 N., R. 59 E., Sec. 1, N2	320	All
T. 4 N., R. 60 E., Sec. 34, S2	320	All
<u>Dawson County</u>		
T. 18 N., R. 55 E., Sec. 22, W2SW	80	All
<u>Wibaux County</u>		
T. 18 N., R. 59 E., Sec. 2, lots 1, 2, S2NE, SE	322.48	All
Sec. 12, all	640	All
Total	3729.09 acres	

V. Regional Geology

The subject tracts, with the exception of those in Custer and Fallon Counties, are located within the west-central to southwestern portion of the Williston Basin. Regional dip is to the northeast at low angles. The Custer and Fallon County tracts are situated west of the Cedar Creek Anticline along the Miles City Arch, which forms the northern margin of the Powder River Basin.

Bedrock underlying the region are composed of sedimentary strata ranging in age from Cambrian to Recent and attain a thickness of over 13,000 feet above the crystalline basement. Most of the region is underlain by the Paleocene Fort Union Formation. The Fort Union is composed of sandstone, siltstone, shale, carbonaceous shale, coal and clinker (baked or fused rock resulting from burning coal veins) (Ross, 1955).

Alluvium of Quaternary Age and terrace deposits of Quaternary and Tertiary age, which occur throughout much of the region, are composed of interbedded clay, silt, sand and gravel, and make up the youngest geologic units in the area. Terraces occur mainly near the valley sides and uplands along the Yellowstone River which passes through the southern part of the study area. Alluvium is thickest along the Missouri and Yellowstone Rivers and their major tributaries, but is present along many smaller streams. Glacial drift of Wisconsin Age, principally occurs in the northern part of the region in Richland and northern Dawson Counties. The ground moraine consists of a compact mixture of clay, silt, sand, pebbles, cobbles, and boulders. Outwash deposits resulting from receding glacial ice are present in channels that have eroded into the moraine (Denson and Gill, 1965).

VI. Local Geology

The subject tracts are all underlain by the Paleocene Fort Union Formation. The Fort Union is made up of three members, in ascending order, the Tullock, Lebo and Tongue River. The Tullock Member is composed of a sequence of yellow sandstone, sandy shale, carbonaceous shale and numerous, thin, impure coal beds. The depositional environment of the Tullock was continental and the abundant swamps associated with deposition produced coal of poor commercial quality. The thickness of the Tullock is generally 40 to 500 feet in this part of Montana.

The Lebo Member is a dark gray shale ranging in thickness from 125 to 1,000 feet. It contains no known minerals of economic importance.

The Tongue River Member is composed of yellow sandstone, buff sandy shale, carbonaceous shale, coal and clinker. The Tongue River ranges in thickness from 450 to 1,000 feet in the area. Commercial coal is available in this member within the region (Balster, 1971).

VII. Mineral Occurrence and Development Potential

The subject tracts have occurrence potential for oil, gas, coal, and mineral materials (scoria) resources, however development potential varies widely between the tracts.

Oil and Gas-

The region in which the subject tracts are located (Big Dry Resource Area) contains the largest number of oil and gas fields in the state. Several geologic features (Cedar Creek, Cat Creek, and Redwater Anticlines) predominantly affect oil and gas production. Other important structures include the Ekalaka, Sheep Mountain, Opheim, and Blood Creek Synclines. Three major fault zones are in the area of Vandalia, Weldon, and Brockton-Froid faults. Major domes include the Porcupine and Poplar domes. The Miles City arch is located along the southwestern edge of the area.

Oil and gas production in the area is concentrated in the west-central portion of the Williston Basin and along the Cedar Creek Anticline. Gas was discovered on the Cedar Creek Anticline in 1920 and oil in 1936. This anticline roughly forms the southwestern margin of the Williston Basin.

The tracts with the greatest potential for development of oil and gas are those in northern Richland County in T. 25 N., R. 56 E., T. 26 N., R. 57 E., and T. 19 N., R. 59 E. Those lands within T. 26 N., R. 57 E. are located within or near the Middle Sioux Pass field which produces oil primarily from the Ordovician Red River Formation and Mississippian Mission Canyon and Ratcliffe Formations. There have been no wells drilled in either tract in sections 23 and 26. They are considered to have high potential for oil and gas development.

The tract in section 15, T. 25 N., R. 56 E., is located within 1 to 2 miles of several wells which have produced from the Red River, Devonian Duperow, and Mission Canyon Formations in the Windmill and Hardscrabble Creek fields. There has been no drilling on the subject tract. This tract is considered to have high development potential for oil and gas.

The tracts located in southern Richland and northern Wibaux Counties in Twps. 18 and 19 N., R. 59 E., are relatively far from production. The nearest production is from a single well Red River field, 6 to 8 miles southwest of the tracts. Several dry holes have been drilled within close proximity to the tracts which targeted Mississippian, Devonian and Ordovician formations. No drilling has occurred on any of these tracts and they are considered to have moderate development potential.

The Dawson County tract, located in T. 18 N., R. 55 E., is located approximately 10 miles southwest of the South Burns Creek field which produces from one well in the Red River. The tract is also approximately 15 miles southwest of the Deer Creek field which produces from the Mississippian Charles Formation. The nearest drilling to the tract, 1 mile to the east, was a dry hole which tested the Charles and Red River. Slight oil and gas shows were reported. This tract is considered to have moderate to high development potential.

The Fallon County tracts in T. 3 N., R. 59 E., and T. 4 N., R. 60 E., are from 10 to 15 miles southwest from production associated with the Cedar Creek Anticline. There has been no production in either of the subject townships and several dry holes have been reported. The nearest reported shows were from a Red River test in section 21, T. 4 N., R. 60 E., 2 to 3 miles north and northwest of the tracts. The tracts are considered to have high to moderate development potential for oil and gas.

The Custer County tracts in T. 6 N., R. 53 E., have no nearby production. The nearest exploration was a well, located 1 mile to the northeast, drilled to the Upper Jurassic Swift Formation. Drillstem tests taken in the Cretaceous Muddy Sandstone reported no shows. The subject tracts are considered to have moderate development potential.

Coal-

The Fort Union Formation contains deposits of coal throughout the region. All of the subject tracts, which are underlain by the Fort Union, are considered to have occurrence potential for coal. The only tracts with development potential, which contain coal resources of economic importance, are located in Custer County in T. 6 N., R. 53 E., sections 2 and 11. Those tracts are located within the Knowlton coal field where the Dominy Bed occurs in minable thicknesses (USGS, 1983).

The tract in section 2 (480 acres) contains an estimated 25.8 million tons of in-place reserves. Section 11 (640 acres) contains an estimated 16.0 million tons of in-place reserves. Coal rights in section 2 are owned by the United States, while coal rights in section 11 are under private ownership. The federal coal in section 2 is not likely to be developed within the foreseeable future. Transfer of surface ownership of that tract to the State of Montana would not likely result in surface owner non-consent which would preclude future federal coal leasing. Transfer of the surface rights in section 11 would have no effect on federal coal leasing.

Mineral Materials-

Mineral materials resources, in the form of scoria, are abundant throughout the region. Scoria deposits are a result of baking overlying rock from burning coal beds. Scoria is associated with most coal deposits and is widely available where the coal-bearing Fort Union Formation is present.

Development potential for mineral materials resources on the subject tracts is unknown. There are no known pits or permits for operations on any of the tracts. Development of mineral materials on any of the tracts could occur if sufficient demand were present. However, exploration, sampling and testing would be necessary in order to determine the nature, quality and extent of mineral materials deposits suitable for construction purposes.

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Ross, Clyde P., et al, 1955, Geological Map of Montana: US Geological Survey, Prepared in cooperation with the Montana Bureau of Mines and Geology.

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Appendix C Policy On Ground Breaking

SURFACE MANAGEMENT BUREAU

Management Memo: SM 93-5-1

Subject: PROCEDURES FOR GRANTING LAND
BREAKING ON STATE TRUST LAND

Author: Grady, Dirkson, Aberg, Chappell

Last Update: 5/24/93.

Updated by: KC

Status: -FINAL-

I. AUTHORITY

The authority for the Department to grant a lessee of State lands the right to cultivate such lands is contained in § 77-6-209, MCA and 26.3.136, ARM. A lessee that desires to cultivate any part of the land they hold under lease shall make written application to the Department. The request shall include a map showing acreage location, Section, Township, Range, Lease Number and County.

Reclassification from Class I (grazing) to Class 3 (agriculture) requires completion of a capability inventory pursuant to § 77-1-403, MCA. The capability inventory shall be made prior to reclassification and shall include information on the following:

1. Soils Capability
2. Vegetation
3. Wildlife Use
4. Mineral Characteristics
5. Public Use
6. Aesthetic Values
7. Cultural Values
8. Surrounding Land Use
9. Any other resources, zoning or planning information related to the classification.

Additional Information that should be included:

1. Soils data, topographic and aerial map
2. Written response from MT Department of Fish, Wildlife & Parks, Soil Conservation Service and/or Conservation District
3. Appropriate MEPA Document
4. Area Land or Unit Office special stipulations
5. Area Land or Unit Office recommendations
6. Recreational Use or Potential

II. GOALS

It is the goal of the Department to allow the tillage of State lands for agricultural purposes using acceptable tillage methods, conservation practices and specified criteria in order to generate the greatest income to the Trust and to protect the long term productivity of the trust resources.

III. OBJECTIVES

To review all applications for breaking requests of State land in a systematic manner.

To remain in compliance with current and future Farm Bill policies that will provide for the greatest protection of the land resources and sustaining the greatest yield to the lessee and the Trust.

To evaluate the conditions on the State lands being considered for agricultural crops based on the highest and best use.

IV. PROCEDURES

All break requests for native sod on State land shall be submitted to the Department in writing and shall outline the proposed action. Only Land Capability Class III or better will be considered for breaking on native sod. In general, small suitable areas scattered throughout a section of rangeland will not qualify for agricultural classification. However, small areas of suitable land may be broken if a more workable field with adjacent lands is the result. These situations must be handled on a case by case basis.

For dryland farming methods, the following requirements for breaking must be met:

1. The soils must be 20 inches or more in depth over shale, and bedrock.
2. The slopes must not be greater than 8%.
3. The soil texture should be loams through light clay.
4. There should not be over 35% coarse fragments throughout the soil profile.
5. The water table must be at least 30 inches below the surface during the growing season.
6. Saline or alkali conditions must be no more than slight as determined through soil testing and as suggested by soil surface conditions.
7. There must be no known saline seep potential, nor any potential to be a recharge area above an area showing signs of salinity.
8. Annual precipitation must be at least 10 inches per year.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.
10. Soils having the potential for extreme wind or water erosion shall not be broken even though the soil is Capability Class III.
11. Drainage areas must always be maintained in permanent grass waterways or by acceptable conservation practices.

For irrigation farming methods, the following requirements for breaking must be met:

1. Soil textures must be loams through clay of less than 50% clay fraction.
2. The available water holding capacity of the soil is three inches or more, within the first 24 inches of the soil profile.

3. There should not be over 35% coarse fragments throughout the profile.
4. The slopes must not be greater than 8% on sprinkler irrigation systems and 4% on flood irrigation systems.
5. The soils must be at least six feet in depth over shale or bedrock and must have drainage potential.
6. The water table must be at least 40 inches below the surface during the growing season.
7. Saline or alkali conditions must be no more than slight with good drainage and adequate, suitable irrigation water must be available.
8. There must be no known saline seep potential nor any potential to be a recharge area above an area showing signs of salinity.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.

All State Lands Other Than Native Sod

For lands other than native sod, breaking will require them to be a Capability Class III or better and the criteria outlined under native sod must be met. Those lands with Capability Class IV could be reviewed and accepted, only if meeting the following criteria:

For dryland farming methods, the following requirements for breaking must be met:

1. The soils must be 60 inches or more in depth over shale, and bedrock.
2. The slopes must not be greater than 8%.
3. The soil texture should be loams through clay.
4. There should not be over 35% coarse fragments throughout the soil profile.
5. Soils must have a soil loss tolerance (T) factor of 5 tons/acre/year.
6. Tillage of the soils must be done in such a manner that the combined wind and water erosion have a soil loss tolerance (T) factor not greater than 5 tons/acre/year.
7. Soils must have a Wind Erodibility Group (WEG) value not less than 4.
8. Soils must be capable of producing greater than 20 bushels per acre spring wheat as determined by SCS land capability classes and yield per acre of crops and pasture data.
9. The water table must be at least 20 inches below the surface during the growing season.

10. Saline or alkali conditions must be no more than slight as determined through soil testing and as suggested by soil surface conditions.
11. There must be no known saline seep potential, nor any potential to be a recharge area above an area showing signs of salinity.
12. Annual precipitation must be at least 10 inches per year.
13. The soils must not be subject to flooding or surface ponding during the regular growing season.
14. Drainage areas must always be maintained in permanent grass waterways or by acceptable conservation practices.

For irrigation farming methods, the following requirements for breaking must be met:

1. Soil textures must be loams through clay of less than 50% clay fraction.
2. The available water holding capacity of the soil is three inches or more, within the first 24 inches of the soil profile.
3. There should not be over 35% coarse fragments throughout the profile.
4. The slopes must not be greater than 8% on sprinkler irrigation systems and 4% on flood irrigation systems.
5. The soils must be at least six feet in depth over shale or bedrock and must have drainage potential.
6. The water table must be at least 40 inches below the surface during the growing season.
7. Saline or alkali conditions must be no more than slight with good drainage and adequate, suitable irrigation water must be available.
8. There must be no known saline seep potential nor any potential to be a recharge area above an area showing signs of salinity.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.

If the place of use for the irrigation water is located on state lands, the water right must be filed in the name of the State. Special considerations should be noted on the lease if the source of water is not located on State lands.

Department Review

All break requests, whether submitted to the main office in Helena or the Area Land Office, shall be initially addressed by the Area Land Office in which the lease is located. All land breaking requests must be evaluated by an on-the-ground inspection to assure that the best interests of the Trust are being served.

Upon receipt of the land breaking request, the Area Land Office shall contact the appropriate Conservation District or SCS office for any input that may be required or useful. Data such as maps, aerial photographs, range evaluations, soils information and other pertinent data should be reviewed before completing the land breaking proposal. Other appropriate agencies, including the Department of Fish, Wildlife and Parks, shall be contacted requesting a written response of any concerns regarding the land breaking request. The appropriateness of all comments shall be evaluated and considered before the request to break the land is approved. If the request for breaking the land is obviously not in the best interests of the Trust and/or if the land is not suitable for agricultural purposes at the initial on-the-ground inspection, the lessee shall be notified by the Area Land Office that the request is denied. A copy of the notification shall be sent to the Surface Management Bureau. If the Area Land Office does not notify the lessee, the notification will be by the Surface Management Bureau.

If the initial review indicates that the land may be suitable for agricultural purposes, the Area Land Office shall develop a land breaking proposal. The Area Land Office will submit the land breaking proposal, including their recommendations and the documentation required in the Break Request/Range Renovation check-off sheet, to the Surface Management Bureau.

The Surface Management Bureau shall analyze the proposed breaking request and consult with the Area Land Office over any concerns, or information deficiencies. If, after consultation with the Area Land Office, the Surface Management Bureau determines the breaking should be denied, the Surface Management Bureau shall make that recommendation to the Lands Division Administrator. If the Lands Division Administrator agrees with the recommendation of the Surface Management Bureau, then the Surface Management Bureau shall contact the lessee, in writing, denying the request to break State lands.

If, after consultation with the Area Office, the Surface Management Bureau recommends approval of the breaking request, it will address any concerns and propose any additional stipulations to meet the requirements of the Montana Environmental Policy Act (MEPA) and the Montana Antiquities Act.

The Surface Management Bureau will make the final recommendation for reclassification and request to break to the Lands Division Administrator. If the Lands Division Administrator agrees with the recommendation of the Surface Management Bureau, the Surface Management Bureau will contact the lessee granting approval to break State lands, along with any Supplemental Lease Agreement (SEA). The Area Land office shall monitor the tract to assure that recommendations and stipulations attached under a Supplemental Lease Agreement are carried out as intended.



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